

Indexes to Corrosion

Vol. 56, Nos. 1-12

Title Index

January (No. 1)

Path Dependence of the Potential-Current Density State for Cathodically Polarized Steel in Seawater <i>W.H. Hatt and S. Chen</i>	3
Influence of Overaging Treatment on Localized Corrosion of Al 6056 <i>V. Guillaumin and G. Mankowski</i>	12
Anticorrosion, Antiscaling Coatings Obtained on the Surface of Titanium Alloys by Microarc Oxidation Method and Used in Seawater <i>S.V. Gnedennikov, P.S. Gordienko, S.L. Sinebrukhov, O.A. Khrisanphova, and T.M. Skorobogatova</i>	24
Prediction of Stress Corrosion Cracking Susceptibility of Stainless Steels Based on Repassivation Kinetics <i>H.S. Kuon, E.A. Cho, and K.A. Yeom</i>	32
In-Situ Imaging of Chloride Ions at the Metal/Solution Interface by Scanning Combination Microelectrodes <i>C.-J. Lin, R.-G. Du, and T. Nguyen</i>	41
Galvanostatic Pulse Measurements of Passive and Active Reinforcing Steel in Concrete <i>D.W. Law, S.G. Millard, and J.H. Bungey</i>	48
Variation of Slow Strain Rate Test Fracture Mode of Type 304L Stainless Steel in 288°C Water <i>N. Saito, Y. Tsuchiya, F. Kano, and N. Tanaka</i>	57
Corrosion Behavior of High-Purity Fe-Cr-Ni Alloys in the Transpassive Condition <i>M. Mayuzumi, J. Ohta, and K. Kako</i>	70
Effect of Biomineralized Manganese on the Corrosion Behavior of C1008 Mild Steel <i>B.H. Olesen, P.H. Nielsen, and Z. Lewandowski</i>	80
An Electrochemical Approach to Predicting Long-Term Localized Corrosion of Corrosion-Resistant High-Level Waste Container Materials <i>D.S. Dunn, G.A. Cagnolino, and N. Sridhar</i>	90

February (No. 2)

Application of Local Flow Models in Predicting Distributions of Erosion-Corrosion Locations <i>Y.M. Fenn, Y.P. Ma, and N.M. Chung</i>	116
Effect of Thiosemicarbazones on Corrosion of Steel in Phosphoric Acid Produced by Wet Process <i>E. Khamis, M.A. Amer, N.M. AlAndis, and G. Al-Senani</i>	127
Galvanic Protection Distance of Zinc-Coated Steels Under Various Environmental Conditions <i>X.G. Zhang</i>	139
An Overview: Vapor Phase Corrosion Inhibitors <i>A. Subramanian, M. Natesan, V.S. Muralidharan, K. Balakrishnan, and T. Vasudevan</i>	144
Dianil: New and Effective Corrosion Inhibitors for Oil-Well Steel (N-80) and Mild Steel in Boiling Hydrochloric Acid <i>M.A. Quraishi and D. Jamal</i>	156
Electrochemical Noise Measurements Under Pressurized Water Reactor Conditions <i>R. Van Nieuwenhove</i>	161
How to Pressurize Autoclaves for Corrosion Testing Under Carbon Dioxide and Hydrogen Sulfide Pressure <i>J.-L. Crolet and M.R. Boris</i>	167

Effect of Scratching on Galvanic Corrosion in Oil and Gas Environments

<i>T. Hara, H. Asahi, Y. Suehiro, and H. Kaneta</i>	183
High-Temperature Sulfdation of Fe ₃ Al Thermal Spray Coatings at 600°C <i>K.R. Luer, J.N. DuPont, and A.R. Marder</i>	189
Polarization Resistance Method for Determination of Instantaneous Corrosion Rates <i>J.R. Scully</i>	199

March (No. 3)

Inhibition of Pitting Corrosion on Aluminum Alloy 2024-T3: Effect of Soluble Chromate Additions vs Chromate Conversion Coating <i>G.O. Ilevbare, J.R. Scully, J. Yuan, and R.G. Kelly</i>	227
Effect of Prior Cold Work on Intergranular and Transgranular Corrosion in Type 304 Stainless Steels: Quantitative Discrimination by Image Analysis <i>C. Garcia, F. Martin, P. De Tiedra, J.A. Heredero, and M.L. Aparicio</i>	243
Effects of Cathodic Bonding and Blistering on Current Demand for Cathodic Protection of Coated Steel <i>O.O. Krudsen and U. Steinsmo</i>	256
Transpassive Dissolution of Alloy 625, Chromium, Nickel, and Molybdenum in High-Temperature Solutions Containing Hydrochloric Acid and Oxygen <i>P. Kritzer, N. Boukis, and E. Dirnus</i>	265
Analysis of Different Methods to Calculate Electrochemical Noise Resistance Using a Three-Electrode Cell <i>V. Brusamarello, A. Lago, and C.V. Franco</i>	273
Characterization of Hydrogen Permeation Through a Corrosion-Resistant Zinc-Nickel-Phosphorus Alloy <i>A. Durairajan, A. Krishniyer, B.S. Haran, R.E. White, and B.N. Popov</i>	283
Carbon and Nitrogen Effects on Sensitization Resistance of Type 347 Stainless Steels <i>Y.J. Oh, J.H. Yoon, and J.H. Hong</i>	289
An Atmospheric Pressure, Fluidized Bed Combustion System Burning High-Chlorine Coals in the Convection Section <i>K. Liu, W. Xie, W.-P. Pan, and J.T. Riley</i>	298
Effect of Cold Work and Processing Orientation on Stress Corrosion Cracking Behavior of Alloy 600 <i>W.C. Moshier and C.M. Brown</i>	307
Pigment-Derived Inhibitors for Aluminum Alloy 2024-T3 <i>R.L. Cook, Jr. and S.R. Taylor</i>	321

April (No. 4)

High-Temperature Oxidation Behavior of Two-Phase Iron-Manganese-Aluminum Alloys <i>S.-Y. Liu, C.-L. Lee, C.-H. Kao, and T.-P. Perng</i>	339
A New Equation for Potential Attenuation and Anode Current Output Projection for Cathodically Polarized Marine Pipelines and Risers <i>P. Pierson, K.P. Bethune, W.H. Hatt, and P. Anathakrishnan</i>	350
Effects of Chromate and Molybdate on Stress Corrosion Cracking of Type 304 Austenitic Stainless Steel in Hydrochloric Acid Solution <i>R. Nishimura and Sundjono</i>	361

Indexes to Corrosion

Vol. 56, Nos. 1-12

Title Index

January (No. 1)

Path Dependence of the Potential-Current Density State for Cathodically Polarized Steel in Seawater <i>W.H. Hatt and S. Chen</i>	3
Influence of Overaging Treatment on Localized Corrosion of Al 6056 <i>V. Guillaumin and G. Mankowski</i>	12
Anticorrosion, Antiscaling Coatings Obtained on the Surface of Titanium Alloys by Microarc Oxidation Method and Used in Seawater <i>S.V. Gnedennikov, P.S. Gordienko, S.L. Sinebrukhov, O.A. Khrisanphova, and T.M. Skorobogatova</i>	24
Prediction of Stress Corrosion Cracking Susceptibility of Stainless Steels Based on Repassivation Kinetics <i>H.S. Kuon, E.A. Cho, and K.A. Yeom</i>	32
In-Situ Imaging of Chloride Ions at the Metal/Solution Interface by Scanning Combination Microelectrodes <i>C.-J. Lin, R.-G. Du, and T. Nguyen</i>	41
Galvanostatic Pulse Measurements of Passive and Active Reinforcing Steel in Concrete <i>D.W. Law, S.G. Millard, and J.H. Bungey</i>	48
Variation of Slow Strain Rate Test Fracture Mode of Type 304L Stainless Steel in 288°C Water <i>N. Saito, Y. Tsuchiya, F. Kano, and N. Tanaka</i>	57
Corrosion Behavior of High-Purity Fe-Cr-Ni Alloys in the Transpassive Condition <i>M. Mayuzumi, J. Ohta, and K. Kako</i>	70
Effect of Biomineralized Manganese on the Corrosion Behavior of C1008 Mild Steel <i>B.H. Olesen, P.H. Nielsen, and Z. Lewandowski</i>	80
An Electrochemical Approach to Predicting Long-Term Localized Corrosion of Corrosion-Resistant High-Level Waste Container Materials <i>D.S. Dunn, G.A. Cagnolino, and N. Sridhar</i>	90

February (No. 2)

Application of Local Flow Models in Predicting Distributions of Erosion-Corrosion Locations <i>Y.M. Fenn, Y.P. Ma, and N.M. Chung</i>	116
Effect of Thiosemicarbazones on Corrosion of Steel in Phosphoric Acid Produced by Wet Process <i>E. Khamis, M.A. Amer, N.M. AlAndis, and G. Al-Senani</i>	127
Galvanic Protection Distance of Zinc-Coated Steels Under Various Environmental Conditions <i>X.G. Zhang</i>	139
An Overview: Vapor Phase Corrosion Inhibitors <i>A. Subramanian, M. Natesan, V.S. Muralidharan, K. Balakrishnan, and T. Vasudevan</i>	144
Dianil: New and Effective Corrosion Inhibitors for Oil-Well Steel (N-80) and Mild Steel in Boiling Hydrochloric Acid <i>M.A. Quraishi and D. Jamal</i>	156
Electrochemical Noise Measurements Under Pressurized Water Reactor Conditions <i>R. Van Nieuwenhove</i>	161
How to Pressurize Autoclaves for Corrosion Testing Under Carbon Dioxide and Hydrogen Sulfide Pressure <i>J.-L. Crolet and M.R. Boris</i>	167

Effect of Scratching on Galvanic Corrosion in Oil and Gas Environments

<i>T. Hara, H. Asahi, Y. Suehiro, and H. Kaneta</i>	183
High-Temperature Sulfdation of Fe ₃ Al Thermal Spray Coatings at 600°C <i>K.R. Luer, J.N. DuPont, and A.R. Marder</i>	189
Polarization Resistance Method for Determination of Instantaneous Corrosion Rates <i>J.R. Scully</i>	199

March (No. 3)

Inhibition of Pitting Corrosion on Aluminum Alloy 2024-T3: Effect of Soluble Chromate Additions vs Chromate Conversion Coating <i>G.O. Ilevbare, J.R. Scully, J. Yuan, and R.G. Kelly</i>	227
Effect of Prior Cold Work on Intergranular and Transgranular Corrosion in Type 304 Stainless Steels: Quantitative Discrimination by Image Analysis <i>C. Garcia, F. Martin, P. De Tiedra, J.A. Heredero, and M.L. Aparicio</i>	243
Effects of Cathodic Bonding and Blistering on Current Demand for Cathodic Protection of Coated Steel <i>O.O. Krudsen and U. Steinsmo</i>	256
Transpassive Dissolution of Alloy 625, Chromium, Nickel, and Molybdenum in High-Temperature Solutions Containing Hydrochloric Acid and Oxygen <i>P. Kritzer, N. Boukis, and E. Dirnus</i>	265
Analysis of Different Methods to Calculate Electrochemical Noise Resistance Using a Three-Electrode Cell <i>V. Brusamarello, A. Lago, and C.V. Franco</i>	273
Characterization of Hydrogen Permeation Through a Corrosion-Resistant Zinc-Nickel-Phosphorus Alloy <i>A. Durairajan, A. Krishniyer, B.S. Haran, R.E. White, and B.N. Popov</i>	283
Carbon and Nitrogen Effects on Sensitization Resistance of Type 347 Stainless Steels <i>Y.J. Oh, J.H. Yoon, and J.H. Hong</i>	289
An Atmospheric Pressure, Fluidized Bed Combustion System Burning High-Chlorine Coals in the Convection Section <i>K. Liu, W. Xie, W.-P. Pan, and J.T. Riley</i>	298
Effect of Cold Work and Processing Orientation on Stress Corrosion Cracking Behavior of Alloy 600 <i>W.C. Moshier and C.M. Brown</i>	307
Pigment-Derived Inhibitors for Aluminum Alloy 2024-T3 <i>R.L. Cook, Jr. and S.R. Taylor</i>	321

April (No. 4)

High-Temperature Oxidation Behavior of Two-Phase Iron-Manganese-Aluminum Alloys <i>S.-Y. Liu, C.-L. Lee, C.-H. Kao, and T.-P. Perng</i>	339
A New Equation for Potential Attenuation and Anode Current Output Projection for Cathodically Polarized Marine Pipelines and Risers <i>P. Pierson, K.P. Bethune, W.H. Hatt, and P. Anathakrishnan</i>	350
Effects of Chromate and Molybdate on Stress Corrosion Cracking of Type 304 Austenitic Stainless Steel in Hydrochloric Acid Solution <i>R. Nishimura and Sundjono</i>	361

Corrosion Behavior of Mild Steel in Acetic Acid Solutions <i>M.M. Singh and A. Gupta</i>	371
Effect of Alloying Elements on Electrochemical Properties of Magnesium-Based Sacrificial Anodes <i>J.-G. Kim and S.-J. Koo</i>	380
In-Situ Electrochemical Impedance Measurement of Oxide Film Formed on Type 304 Stainless Steel in High-Temperature Water <i>Y.-J. Kim</i>	389
Surface Analysis of Various Methods of Preparing Al 2024-T3 Surfaces for Painting <i>R.L. De Rosa, J.T. Grant, L. Katsen, M. Donley, and G.P. Bierwagen</i>	395
Conducting Polymers and Corrosion: Part 2—Polyaniline on Aluminum Alloys <i>D.E. Tallman, Y. Pae, and G.P. Bierwagen</i>	401
Influence of pH and Chloride Concentration on the Pitting and Crevice Corrosion Behavior of High-Alloy Stainless Steels <i>A. Pardo, E. Otero, M.C. Merino, M.D. López, M.V. Utrilla, and F. Moreno</i>	411
Effects of Alloying Elements on Carbon Dioxide Corrosion in 13% to 20% Chromium-Containing Steels <i>T. Hara, H. Asahi, A. Kawakami, and A. Takahashi</i>	419
Corrosion Behavior of Lacquered Tinplate Cans in Contact with Cockles (<i>Cardium Edulis</i>) in Brine Solution <i>J.M. Bastidas, J.M. Cabañas, and R. Catalá</i>	429
Relationship Between Corrosion and the Biological Sulfur Cycle: A Review <i>B.J. Little, R.I. Ray, and R.K. Pope</i>	433
May (No. 5)	
Intergranular Stress Corrosion Cracking Susceptibility of Neutron-Irradiated, Thermally Sensitized Type 304 Stainless Steel <i>T. Onchi, K. Hide, M. Mayuzumi, and T. Hoshiya</i>	451
Effects of Impurities on Environmentally Assisted Crack Growth of Solution-Annealed Austenitic Steels in Primary Water at 325°C <i>G.F. Li, Y. Kaneshima, and T. Shoji</i>	460
Corrosion of Iron Under Alternating Wet and Dry Conditions <i>D.S. Dunn, M.B. Bogart, C.S. Brossia, and G.A. Cagnolino</i>	470
Effects of Flow Rate on Crack Growth in Sensitized Type 304 Stainless Steel in High-Temperature Aqueous Solutions <i>H.S. Kuwon, A. Wuensche, and D.D. Macdonald</i>	482
Influence of Remote Cathodes on Corrosion Mechanism at Exposed Cut Edges in Organically Coated Galvanized Steels <i>D.A. Worsley, S.M. Powell, and H.N. McMurray</i>	492
Corrosion of Nickel Metal by Hydrothermal Sodium Tungstate Solution Observed by In-Situ Infrared Spectroscopy <i>M.M. Hoffmann and J.L. Fulton</i>	501
Effect of Environmental Variables on Localized Corrosion of Carbon Steel <i>C.S. Brossia and G.A. Cagnolino</i>	505
In-Situ Transmission Electron Microscopic Observation of Corrosion-Enhanced Dislocation Emission and Crack Initiation of Stress Corrosion <i>K.W. Gao, W.Y. Chu, B. Gu, T.C. Zhang, and L.J. Qiao</i>	515
Pit Simulation Study of Zirconium Under Simple Immersion Conditions in Oxidizing Chloride Solutions <i>G.C. Palit</i>	523
Conditions Under Which Cracks Occur in Modified 13% Chromium Steel in Wet Hydrogen Sulfide Environments <i>T. Hara and H. Asahi</i>	533
Model for Corrosion of Carbon Steel in Lithium Bromide Absorption Refrigeration Systems <i>A. Anderko and R.D. Young</i>	543

June (No. 6)

Prediction of Aluminum Pitting in Natural Waters via Artificial Neural Network Analysis <i>J. Leifer and J.I. Mickalonis</i>	563
High-Resolution Characterization of Intergranular Attack and Stress Corrosion Cracking of Alloy 600 in High-Temperature Primary Water <i>L.E. Thomas and S.M. Bruemmer</i>	572
Effect of Corrosion Products on the Atmospheric Corrosion of Electrodeposited Zinc and Zinc Alloy Coatings <i>R. Ramanaukas, P. Quintana, P. Bartolo-Pérez, and L. Diaz-Ballote</i>	588
Effect of Galvanic Coupling Between Overpack Materials of High-Level Nuclear Waste Containers <i>D.S. Dunn, G.A. Cagnolino, and N. Sridhar</i>	598
Numerical Model for Hydrogen-Assisted Cracking <i>Th. Boellinghaus and H. Hoffmeister</i>	611
Inhibitory Effect of Zinc Addition to High-Temperature Hydrogenated Water on Mill-Annealed and Presurfaced Alloy 600 <i>H. Kawamura, H. Hirano, S. Shirai, H. Takamatsu, T. Matsunaga, K. Yamaoka, K. Oshinden, and H. Takiguchi</i>	623
Barium Sulfate Deposition and Precipitation Using a Combined Electrochemical Surface and Bulk Solution Approach <i>A.P. Morizot and A. Neville</i>	638
Stress Corrosion Behavior of Aluminum Alloy 2024/Silicon Carbide Particles (SiC _p) Metal Matrix Composites <i>G.E. Kiourtsidis and S.M. Skolianos</i>	646
Corrosion and Erosion-Corrosion of Ceramics and Functionally Gradient Material-Coated Steels in Erosion Environments <i>H.X. Zhao, T. Masuda, C.L. Li, T. Takahashi, and M. Matsunura</i>	654
July (No. 7)	
Frequency Analysis of Transients in Electrochemical Noise: Mathematical Relationships and Computer Simulations <i>U. Bertocci, F. Huet, B. Jaoul, and P. Rousseau</i>	675
Effect of Linoleate on Electrochemical Behavior of Stainless Steel in Phosphate Buffer <i>S. Omanovic and S.G. Roscoe</i>	684
Kinetics of Passive Film Formation on Martensitic Stainless Steels <i>R. Godec, A. Petek, and V. Dolecák</i>	694
A New, Chrome-Free Passivation Method of Tinplate Used in the Canning Industry <i>D. Yfantis, A. Yfantis, B. Tzalas, and D. Schmeisser</i>	700
Model Study Investigating the Role of Interfacial Factors in Electrochemical Impedance Spectroscopy Measurements <i>M. Chen, Q.S. Yu, C.M. Reddy, and H.K. Yasuda</i>	709
A Novel Electrochemical Testing Method and Its Use in the Investigation of Underfilm Corrosion of Temporarily Protective Oil Coating <i>Z. Qingdong</i>	722
Migrating Corrosion Inhibitor Blend for Reinforced Concrete: Part 2—Inhibitor as Repair Strategy <i>B. Elsener, M. Büchler, F. Stalder, and H. Böhni</i>	727
2,5-Bis(n-Pyridyl)-1,3,4-Oxadiazoles as Corrosion Inhibitors for Mild Steel in Acidic Media <i>F. Bentiss, M. Lagrenée, and M. Traisnel</i>	733
Real-Time Localized Corrosion Monitoring in Industrial Cooling Water Systems <i>B. Yang</i>	743
Properties of Rigid Polyurethane Foams Related to Their Use for Corrosion Control Inside Confined Spaces <i>P.P. Trzaskoma-Paulette, S.G. Lambrakos, and H.N. Jones</i>	757

August (No. 8)

2000 F.N. Speller Award Lecture: Stress Corrosion Cracking in Pressurized Water Reactors—Interpretation, Modeling, and Remedies	771
<i>P.M. Scott</i>	
Modeling Transport Process and Current Distribution in a Cathodically Protected Crevice	783
<i>D.-T. Chin and G.M. Sabde</i>	
Application of Boundary Element Models to Predict Effectiveness of Coupons for Assessing Cathodic Protection of Buried Structures	794
<i>D.P. Riemer and M.E. Orazem</i>	
Nickel-Based Alloys in Carbonaceous Gases	801
<i>H.J. Grabke</i>	
Titanium Corrosion in Alkaline Hydrogen Peroxide	809
<i>J. Been and D. Tromans</i>	
Improved Corrosion Protection of Aluminum Alloys by System Approach Interface Engineering: Part 1—Alclad 2024-T3	819
<i>C.M. Reddy, Q.S. Yu, C.E. Moffitt, D.M. Wieliczka, R. Johnson, J.E. Deffeyes, and H.K. Yasuda</i>	
Corrosion Layers of Low-Alloy Carbon Steels in $\text{CO}_{2(\text{g})}$ -Saturated Solutions by Mössbauer Spectroscopy	832
<i>I. Raspini, E. Chung, and C. Saragovi</i>	
Electrochemical Behavior of Duplex Stainless Steel in Borate Buffer Solution	839
<i>M. Gojic, D. Marjan, and L. Kosec</i>	
Corrosion Resistance and Electrochemical Potentiokinetic Reactivation Testing of Some Iron-Based Hardfacing Alloys	849
<i>B.V. Cockeram</i>	
Effect of Flow Velocity on Carbon Dioxide Corrosion Behavior in Oil and Gas Environments	860
<i>T. Hara, H. Asahi, Y. Suehiro, and H. Kaneta</i>	
Online Monitoring Systems of Microbiologically Influenced Corrosion on Cu-10% Ni Alloy in Chlorinated, Brackish Water	867
<i>M. de Romero, Z. Duque, O. de Rincón, O. Pérez, I. Araujo, and A. Martínez</i>	

September (No. 9)

Atmospheric Corrosion Performance of Quenched-and-Tempered, High-Strength Weathering Steel	883
<i>H.E. Townsend</i>	
Improved Corrosion Protection of Aluminum Alloys by System Approach Interface Engineering: Part 2—AA2024-T3	887
<i>Q.S. Yu, C.M. Reddy, C.E. Moffitt, D.M. Wieliczka, R. Johnson, J.E. Deffeyes, and H.K. Yasuda</i>	
Preparation of Protective Films Containing Molybdate for Self-Healing of a Scratched Iron Surface	901
<i>K. Aramaki</i>	
Effect of Silicon and Manganese Additions on the Transpassive Corrosion of High-Purity Fe-18% Cr-14% Ni Alloys	910
<i>M. Mayuzumi, J. Ohta, K. Kako, and E. Kawakami</i>	
Comparative Analysis of Electrochemical Noise Generated During Stress Corrosion Cracking of AISI 304 Stainless Steel	921
<i>M. Lebar, V. Dolcēk, and A. Legat</i>	
Transient Analysis and Simulation of Pitting Corrosion for the Estimation of Noise Resistance	928
<i>G. Miramontes de León, D.C. Farden, and D.E. Tallman</i>	
Electrochemical Behavior of Rust Formed on Carbon Steel in a Wet/Dry Environment Containing Chloride Ions	935
<i>T. Nishimura, H. Katayama, K. Noda, and T. Kodama</i>	
Microbiologically Influenced Corrosion of Copper in Potable Water Systems—pH Effects	942
<i>B.J. Webster, S.E. Werner, D.B. Wells, and P.J. Bremer</i>	
Electrical Resistance Changes as an Alternate Method for Monitoring the Corrosion of Steel in Concrete and Mortar	951
<i>P.A. Cella and S.R. Taylor</i>	

Corrosion Products of Galvanized Rebars Embedded in Chloride-Contaminated Concrete

F. Belaid, G. Arliguie, and R. Francois 960

October (No. 10)

2000 W.R. Whitney Award Lecture: Visualizing Corrosion*H.S. Isaacs, G. Adzic, and C.S. Jeffcoat* 971**Technical Note:** Crevice Effect on Corrosion of Steel in Simulated Concrete Pore Solutions*A.A. Sagüés, L. Li, and H.W. Pickering* 979**Technical Note:** CAHMT—A New and Eco-Friendly Acidizing Corrosion Inhibitor*M.A. Quraishi and D. Jamal* 983**Discussion:** Migrating Corrosion Inhibitor Blend for Reinforcing Concrete: Part 1—Prevention of Corrosion*A. Rosenberg* 986

A Principal Determinant in Cathodic Protection Design of Offshore Structures—The Mean Current Density

W.H. Hartt and E. Lemieux 988

Effects of Electrolytic Zirconium Oxide Coating on Hydrogen Permeation of AISI 430 Stainless Steel

S.K. Yen, I.B. Huang, and Z.S. Yen 998

Testing for Erosion-Corrosion Under Disturbed

Flow Conditions Using a Rotating Cylinder with a Stepped Surface

S. Nesić, J. Bienkowski, K. Bremhorst, and K.-S. Yang 1005

Effects of Sulfate and Nitrate Ion Additives on Pit Growth of Pure Aluminum in 0.1 M Sodium Chloride Solution

S.-I. Pyun, K.-H. Na, W.-J. Lee, and J.-J. Park 1015

Corrosion Fatigue Crack Initiation in Aluminum Alloys 7075 and 7050

P.S. Pao, C.R. Feng, and S.J. Gill 1022

Improved Corrosion Protection of Al Alloys by System

Approach Interface Engineering: Part 3—AA 7075-T6

*C.E. Moffitt, C.M. Reddy, Q.S. Yu, D.M. Wieliczka,**R. Johnson, J.E. Deffeyes, and H.K. Yasuda* 1032

Initiation of Fissure from Hydrogen Blister in Rail Steel

W.Y. Chu, K.W. Gao, Y.Z. Huang, Y.B. Wang, and L.J. Qiao 1046

Effect of Hydrostatic Testing on Ductile Tearing of X-65 Linepipe Steel with Stress Corrosion Cracks

M.P.H. Brongers, J.A. Beavers, C.E. Jaske, and B.S. Delanty 1050

Electrochemical Screening Test for Corrosion Protective Aerospace Coatings for AA2024-T3

C.N. Hunter, J.H. Osborne, and S.R. Taylor 1059

Influence of Welding and Heat Treatment on Corrosion of a High-Level Waste Container Material Carbon Steel in Disposal Salt Brines

E. Smailos 1071

November (No. 11)

Technical Note: Corrosion Inhibition of Low-Carbon Steel in Phosphoric Acid Solution by 2-Mercaptobenzoxazole*L. Wang, G.-J. Yin, Q.-F. Zhang, and J.-X. Pu* 1083

Influence of Electrolyte Movement on Measured

*Electrochemical Noise**A. Legat* 1086

Review of the Corrosion of Nickel-Based Alloys and Stainless Steels in Strongly Oxidizing Pressurized

High-Temperature Solutions at Subcritical and Supercritical Temperatures

P. Kritzer, N. Boukis, and E. Dirijus 1093

Corrosion Inhibition of Copper in Hydrochloric Acid Under Flow Conditions

E. Stupnišek-Lisac, N. Galic, and R. Gašparac 1105

Stress Corrosion Cracking Caused by Passive

Film-Induced Tensile Stress

H. Lu, K.W. Gao, L.J. Qiao, Y.B. Wang, and W.Y. Chu 1112

Calcium Hydroxide as a Promoter of Hydrogen Absorption in 99.5% Fe and a Fully Pearlitic 0.8% C Steel During Electrochemical Reduction of Water <i>R.S. Lillard, D.G. Enos, and J.R. Scully</i>	1119
Predicting Susceptibility to Intergranular Stress Corrosion Cracking of Alloy 690 <i>M. Casales, M.A. Espinoza-Medina, A. Martínez-Villafañe, V.M. Salinas-Bravo, and J.G. González-Rodríguez</i>	1133
Humectant Use in the Cathodic Protection of Reinforced Concrete <i>G.R. Holcomb, B.S. Covino, Jr., J.H. Russell, S.J. Bullard, S.D. Cramer, W.K. Collins, J.E. Bennett, and H.M. Laylor</i>	1140
Interdependence of On-Load Corrosion, Creep-Rupture, and Copper Deposit in Augmenting Failure Processes of Boiler Tubes <i>S.C. Bose, S.V. Reddy, and K. Singh</i>	1158
Qualifications of Ti-6%Al-4%V-Ru Alloy Production Tubulars for Aggressive Fluoride-Containing Mobile Bay Well Service <i>R.W. Schutz, R.L. Porter, and J.M. Horrigan</i>	1170
Simulation of Coating Failures on Cathodically Protected Pipelines—Experimental and Numerical Results <i>S.L.D.C. Brasil, J.C.F. Telles, and L.R.M. Miranda</i>	1180
December (No. 12)	
Stability and Electrochemical Properties of Passive Layers on Fe-Si Alloys <i>U. Wolff, F. Schneider, K. Mummert, and L. Schultz</i>	1195
Aqueous Corrosion Behavior of Weathering Steel and Carbon Steel in Acid-Chloride Environments <i>Y.-S. Choi and J.-G. Kim</i>	1202
Aqueous Corrosion of Tin-Bronze and Inhibition by Benzotriazole <i>R. Walker</i>	1211
Electrochemical Impedance Spectroscopy Study of the Corrosion Process on Coated Galvanized Steel in a Salt Spray Fog Chamber <i>C. Pérez, A. Collazo, M. Izquierdo, P. Merino, and X.R. Nóvoa</i>	1220
Oxides Formed on Titanium by Polishing, Etching, Anodizing, or Thermal Oxidizing <i>J.R. Birch and T.D. Burleigh</i>	1233
Catalytic Response and Electrode Kinetics on Noble Metal-Treated Type 304 Stainless Steel in 288°C Water <i>Y.J. Kim and P.L. Andresen</i>	1242
Current and Potential Fluctuation Characteristics in Intergranular Stress Corrosion Cracking Processes of Stainless Steels <i>Y. Watanabe and T. Kondo</i>	1250
Formation of Corrosion Products on Open and Confined Zinc Surfaces Exposed to Periodic Wet/Dry Conditions <i>F. Zhu, D. Persson, D. Thierry, and C. Taxen</i>	1256
A Study of Corrosion of Mild Steel in Mixtures of Petroleum Distillates and Electrolytes <i>A. Groysman and N. Erdman</i>	1266
Localized Corrosion of Carbon Steel Weldments <i>M. Sephton and P.C. Pistorius</i>	1272

Author Index

A
 Adzic, G. 971
 Al-Senani, G. 127
 AlAndis, N.M. 127
 Ameer, M.A. 127
 Anathakrishnan, P. 350
 Anderko, A. 543
 Andresen, P. 1242
 Aparicio, M.L. 243
 Aramaki, K. 901
 Araujo, I. 867
 Arlígüe, G. 960
 Asahi, H. 183, 419, 533, 860

B
 Balakrishnan, K. 144
 Bartolo-Pérez, P. 588
 Bastidas, J.M. 429
 Beavers, J.A. 1050
 Been, J. 809
 Belaïd, F. 960
 Bennett, J.E. 1140
 Bentiss, F. 733
 Bertocci, U. 675
 Bethune, K.P. 350
 Bienkowski, J. 1005
 Bierwagen, G.P. 395, 401
 Birch, J.R. 1233
 Boellinghaus, Th. 611
 Bogart, M.B. 470
 Böhni, H. 727, 986
 Bonis, M.R. 167
 Bose, S.C. 1158

Boukis, N. 265, 1093
 Brasil, S.L.D.C. 1180
 Bremer, P.J. 942
 Bremhorst, K. 1005
 Brongers, M.P.H. 1050
 Brossia, C.S. 470, 505
 Brown, C.M. 307
 Bruemmer, S.M. 572
 Brusamarello, V. 273
 Büchler, M. 727, 986
 Bullard, S.J. 1140
 Bungey, J.H. 48
 Burleigh, T.D. 1233

C
 Cabañes, J.M. 429
 Casales, M. 1133
 Catalá, R. 429
 Cellia, P.A. 951
 Chen, M. 709
 Chen, S. 3
 Chin, D.-T. 783
 Cho, E.A. 32
 Choi, Y.-S. 1202
 Chu, W.Y. 515, 1046, 1112
 Chung, E. 832
 Chung, N.M. 116
 Cockeram, B.V. 849
 Collazo, A. 1220
 Collins, W.K. 1140
 Cook, R.L. Jr. 321
 Covino, B.S. Jr. 1140
 Cagnolino, G.A. 90, 470, 505, 598

Cramer, S.D. 1140
 Crolet, J.-L. 167

D
 de Rincón, O. 867
 de Romero, M. 867
 De Rosa, R.L. 395
 De Tiedra, P. 243
 Deffeyes, J.E. 819, 887, 1032
 Delanty, B.S. 1050
 Díaz-Ballote, L. 588
 Dinjus, E. 265, 1093
 Doleček, V. 694, 921
 Donley, M. 395
 Du, R.-G. 41
 Dunn, D.S. 90, 470, 598
 DuPont, J.N. 189
 Duque, Z. 867
 Durairajan, A. 283

E
 Elsener, B. 727, 986
 Enos, D.G. 1119
 Erdman, N. 1266
 Espinoza-Medina, M.A. 1133

F
 Farden, D.C. 928
 Feng, C.R. 1022
 Fergn, Y.M. 116
 Franco, C.V. 273
 Francois, R. 960
 Fulton, J.L. 501

G
 Garcia, C. 243
 Gašparac, R. 1105
 Galić, N. 1105
 Gao, K.W. 515, 1046, 1112
 Gill, S.J. 1022
 Gnedenkov, S.V. 24
 Godec, R. 694
 Gojić, M. 839
 Gonzalez-Rodríguez, J.G. 1133
 Gordienko, P.S. 24
 Grabke, H.J. 801
 Grant, J.T. 395
 Groysman, A. 1266
 Gu, B. 515
 Guillaumin, V. 12
 Gupta, A. 371

H
 Hara, T. 183, 419, 533, 860
 Haran, B.S. 283
 Hartt, W.H. 3, 350, 988
 Heredero, J.A. 243
 Hide, K. 451
 Hirano, H. 623
 Hoffmann, M.M. 501
 Hoffmeister, H. 611
 Holcomb, G.R. 1140
 Hong, J.H. 289
 Horrigan, J.M. 1170
 Hoshiya, T. 451

Huang, I.B., 998
 Huang, Y.Z., 1046
 Huet, F., 675
 Hunter, C.N., 1059

I
 Ilevbare, G.O., 227
 Isaacs, H.S., 971
 Izquierdo, M., 1220

J
 Jamal, D., 156, 983
 Jaoul, B., 675
 Jaske, C.E., 1050
 Jeffcoate, C.S., 971
 Johnson, R., 819, 887, 1032
 Jones, H.N., 757

K
 Kako, K., 70, 910
 Kaneshima, Y., 460
 Kaneta, H., 183, 860
 Kano, F., 57
 Kao, C.-H., 339
 Kasten, L., 395
 Katayama, H., 935
 Kawakami, A., 419
 Kawakami, E., 910
 Kawamura, H., 623
 Kelly, R.G., 227
 Khamis, E., 127
 Khrisanphova, O.A., 24
 Kim, J.-G., 380, 1202
 Kim, Y.-J., 389, 1242
 Kiourtsidis, G.E., 646
 Knudsen, O.Ø., 256
 Kodama, T., 935
 Kondo, T., 1250
 Koo, S.-J., 380
 Kosec, L., 839
 Krishniyer, A., 283
 Kritzer, P., 265, 1093
 Kwon, H.S., 32, 482

L
 Lago, A., 273
 Lagrenée, M., 733
 Lambrikos, S.G., 757
 Law, D.W., 48
 Taylor, H.M., 1140
 Leban, M., 921
 Lee, C.-L., 339
 Lee, W.-J., 1015
 Legat, A., 921, 1086
 Leifer, J., 563
 Lemieux, E., 988
 Lewandowski, Z., 80
 Li, C.L., 654
 Li, G.F., 460
 Li, L., 979
 Lillard, R.S., 1119
 Lin, C.-J., 41
 Little, B.J., 433
 Liu, K., 298
 Liu, S.-Y., 339
 López, M.D., 411

Lu, H., 1112
 Luer, K.R., 189

M

Ma, Y.P., 116
 Macdonald, D.D., 482
 Mankowski, G., 12
 Marder, A.R., 189
 Marijan, D., 839
 Martin, F., 243
 Martinez, A., 867
 Martinez-Villafañe,

A., 1133
 Masuda, T., 654
 Matsumura, M., 654
 Matsunaga, T., 623
 Mayuzumi,

M., 70, 451, 910
 McMurray, H.N., 492
 Merino, M.C., 411
 Merino, P., 1220
 Mickalonis, J.I., 563
 Millard, S.G., 48
 Miramontes de León, G., 928

Miranda, L.R.M., 1180
 Moffitt,
 C.E., 819, 887, 1032
 Moreno, F., 411
 Morizot, A.P., 638
 Moshier, W.C., 307
 Mummert, K., 1195
 Muralidharan, V.S., 144

N

Na, K.-H., 1015
 Natesan, M., 144
 Nesić, S., 1005
 Neville, A., 638
 Nguyen, T., 41
 Nielsen, P.H., 80
 Nishimura, R., 361
 Nishimura, T., 935
 Noda, K., 935
 Növoa, X.R., 1220

O

Oh, Y.J., 289
 Ohta, J., 70, 910
 Olesen, B.H., 80
 Omanović, S., 684
 Onchi, T., 451
 Orazem, M.E., 794
 Osborne, J.H., 1059
 Oshinden, K., 623
 Otero, E., 411

P

Pae, Y., 401
 Palit, G.C., 523
 Pan, W.-P., 298
 Pao, P.S., 1022
 Pardo, A., 411
 Park, J.-J., 1015
 Pérez, C., 1220
 Pérez, O., 867
 Perng, T.-P., 339

Persson, D., 1256
 Petek, A., 694
 Pickering, H.W., 979
 Pierson, P., 350

Pope, R.K., 433
 Popov, B.N., 283
 Porter, R.L., 1170
 Powell, S.M., 492
 Pu, J.-X., 1083
 Pyun, S.-I., 1015

Q

Qiao, L.J., 515, 1112,
 1046
 Qingdong, Z., 722
 Quintana, P., 588
 Quraishi, M.A., 156, 983

R

Ramanauskas, R., 588
 Raspini, I., 832
 Ray, R.I., 433
 Reddy,
 C.M., 709, 819, 887, 1032
 Reddy, S.V., 1158
 Riemer, D.P., 794
 Riley, J.T., 298
 Roscoe, S.G., 684
 Rosenberg, A., 986
 Rousseau, P., 675
 Russell, J.H., 1140

S

Sabde, G.M., 783
 Sagüés, A.A., 979
 Saito, N., 57
 Salinas-Bravo, V.M., 1133
 Saragovi, C., 832
 Schmeisser, D., 700
 Schneider, F., 1195
 Schultz, L., 1195
 Schutz, R.W., 1170
 Scott, P.M., 771
 Scully,

J.R., 199, 227, 1119
 Shirai, S., 623
 Shoji, T., 460
 Sinebrukhov, S.L., 24
 Singh, K., 1158
 Singh, M.M., 371
 Skolianos, S.M., 646
 Skorobogatova, T.M., 24
 Smailos, E., 1071
 Sridhar, N., 90, 598
 Stalder, F., 727, 986
 Steinsmo, U., 256

Stupnišek-Lisac, E., 1105
 Subramanian, A., 144
 Suehiro, Y., 183, 860
 Sundjono, 361

T

Takahashi, A., 419
 Takahashi, T., 654
 Takamatsu, H., 623
 Takiguchi, H., 623

Tallman, D.E., 401, 928
 Tanaka, N., 57
 Taxen, C., 1256

Taylor,
 S.R., 321, 951, 1059
 Telles, J.C.F., 1180
 Thierry, D., 1256

Thomas, L.E., 572

Townsend, H.E., 883

Traisnel, M., 733

Tromans, D., 809

Trzaskoma-Paulette,
 P.P., 757

Tsuchiya, Y., 57

Tzalas, B., 700

U

Utrilla, M.V., 411

V

Van Nieuwenhove, R., 161
 Vasudevan, T., 144

W

Walker, R., 1211
 Wang, L., 1083

Wang, Y.B., 1046, 1112

Watanabe, Y., 1250

Webster, B.J., 942

Wells, D.B., 942

Werner, S.E., 942

White, R.E., 283

Wieliczka,
 D.M., 819, 887, 1032

Wolff, U., 1195

Worsley, D.A., 492

Wuensche, A., 482

X

Xie, W., 298

Y

Yamaoka, K., 623

Yang, B., 743

Yang, K.-S., 1005

Yasuda,
 H.K., 709, 819, 887, 1032

Yen, S.K., 998

Yen, Z.S., 998

Yeom, K.A., 32

Yfantis, A., 700

Yfantis, D., 700

Yin, G.-J., 1083

Yoon, J.H., 289

Young, R.D., 543

Yu,

Q.S., 709, 819, 887, 1032

Yuan, J., 227

Z

Zhang, Q.-F., 1083

Zhang, T.C., 515

Zhang, X.G., 139

Zhao, H.X., 654

Zhu, F., 1256

Subject Index

A

AA 516 steel

galvanic coupling between overpack materials, high-level nuclear waste containers, 598

AA 1100

aluminum pitting, prediction of, via artificial neural network, natural waters, 563

AA 2024

silicon carbide particle composites, stress corrosion behavior, 646

AA 2024-T3

aluminum alloys, corrosion protection, system approach interface engineering, 887

AA 7075-T6

aluminum alloys, corrosion protection, system approach interface engineering, 1032

Absorption

carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543

Acetic acid and solutions. See also Acids and acid solutions

mild steel in acetic acid solutions, corrosion behavior of, 371

Acidization

CAHMT, new corrosion inhibitor, 983

Acids and acid solutions. See also Acetic; Hydrobromic; Hydrochloric; Hydrofluoric; Nitric; Phosphoric; Sulfuric

Activation energy

alloy 600, stress corrosion cracking, effect of cold work and processing orientation, 307

Adhesion

cockles, lacquered tinplate cans in brine solution in contact with, 429

Adsorption

dianilins, oil-well and mild steel in hydrochloric acid, effective inhibitors, 156
inhibitors, mild steel, oxadiazoles, acidic media, 733
linoleate, electrochemical behavior of stainless steel in phosphate buffer, 684

Air plasma spray

thermal spray coatings, high-temperature sulfidation, 189

Al 1100

visualizing corrosion, 971

Al 2024

chromate and chromate conversion coatings, pitting corrosion, 227

pigment-derived inhibitors

for, 321

surfaces for painting preparation, surface analysis of various methods, 395
visualizing corrosion, 971

Al 5052

visualizing corrosion, 971

Al 6056

influence of overaging treatment on localized corrosion, 12

Al 7050

corrosion fatigue crack initiation, 1022

Al 7075

corrosion fatigue crack initiation, 1022
visualizing corrosion, 971

Alloy 600

high-temperature water, intergranular attack, stress corrosion cracking, 572

nickel-based alloys, carbonaceous gas, 801
stress corrosion cracking, effect of cold work and processing orientation, 307

oxide film, high-temperature water, 623

Alloy 601

nickel-based alloys, carbonaceous gas, 801

Alloy 602

nickel-based alloys, carbonaceous gas, 801

Alloy 625

chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265

Alloy 690

alloy 690, intergranular stress corrosion cracking of, 1133

Alloy 800

nickel-based alloys, carbonaceous gas, 801

Alloy 825

galvanic coupling between overpack materials, high-level nuclear waste containers, 598

waste materials, electrochemical approach, localized corrosion, 90

Alloys and alloying. See Aluminum; Carbon; Chromium; Cobalt; Copper; Copper-nickel; Corrosion-resistant; Ferrnal; Ferric and Ferrous; Hardfacing; High-purity; Hydrogen; Iron; Magnesium; Manganese; Molybdenum;

Nickel; Nitrogen; Oxygen; Phosphorus; Silicon; Sulfur; Tin; Titanium; Zinc; Zinc-nickel; Zinc-nickel-phosphorus; Zirconium

Aluminum and aluminum alloys. See also Alloys and alloying

Al 2024, pigment-derived inhibitors for, 321

Al 2024/silicon carbide particles composites, stress corrosion behavior, 646

Al-2024T-3 surfaces for painting preparation, surface analysis of various methods, 395

aluminum pitting, prediction of via artificial neural network, natural waters, 563

chromate and chromate conversion coatings, pitting corrosion, 227

corrosion fatigue crack initiation, 1022

corrosion protection, system approach interface engineering, 819, 887, 1032

electrochemical impedance spectroscopy, interfacial factors, model study, 709

iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339

polyaniline on aluminum alloys, conducting polymers and corrosion, 401

sodium chloride solution, effect of sulfate and nitrate additives on pit growth of, 1015
visualizing corrosion, 971

Aluminum anode

steel in seawater, potential-current density, cathodic polarization, 3

Analytical model

mean current density, determinant in cathodic protection design, offshore structures, 988

Analytical transmission electron microscopy

alloy 600 in high-temperature water, intergranular attack, stress corrosion cracking, 572

Anatase

titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

Anodes

cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350

- steel in seawater, potential-current density, cathodic polarization, 3
- Anodic polarization**
zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523
- Aqueous solutions and environments**
tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211
- Aqueous solutions and environments**
carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543
- nickel metal, by hydrothermal sodium tungstate solution, in-situ infrared spectroscopy, 501
- weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202
- Artificial pit**
aluminum in sodium chloride solution, effect of sulfate and nitrate additives on pit growth of, 1015
- Atmospheric corrosion**
iron, under alternating wet and dry conditions, corrosion of, 470
- weathering steel, atmospheric corrosion of quenched, tempered, high-strength, 883
- zinc and zinc alloy coatings, 588
- zinc surfaces, formation of corrosion products exposed to periodic wet-dry conditions, 1256
- Auger electron spectroscopy**
Al-2024T-3 surfaces for painting preparation, surface analysis of various methods, 395
- steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951
- Austenite**
duplex stainless steel in borate buffer solution, electrochemical behavior of, 839
- iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339
- Austenitic stainless steel. See also by name; by type; by UNS number; Stainless steel**
high-purity iron-chromium-nickel alloys, effect of silicon, manganese on transpassive corrosion, 910
- iron-chromium-nickel alloys, high-purity, transpassive condition, 70
- pressurized water reactors, stress corrosion cracking in, interpretation, modeling, remedies, 771
- stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361
- type 304 stainless steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- Autoclaves**
carbon dioxide and hydrogen sulfide pressure, 167
- Autogenous welding**
steel weldments, localized corrosion of carbon steel, 1272
- B**
- Barium sulfate**
deposition and precipitation using electrochemical surface, bulk solution, 638
- Benzotriazole**
tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211
- Biomineralization**
mild steel, biomineralized manganese on corrosion behavior of C1008, 80
- Blister and blistering**
coated steel, cathodic disbonding, blistering on current demand, cathodic protection, 256
- rail steel, initiation of fissure from hydrogen blister in, 1046
- stainless steel, effects of electrolytic zirconium oxide coating on hydrogen permeation of, 998
- Blue water**
copper, microbiologically influenced corrosion in potable water systems, pH effects, 942
- Boiler tubes**
boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158
- Boiling water reactor**
stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242
- type 304 stainless steel, electrochemical impedance measurement, oxide film formed on, 389
- Boundary element method**
cathodic protection of buried structures, coupon effectiveness, 794
- pipelines, simulation of coating failures on cathodically protected, 1180
- Brackish water**
microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, 867
- stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361
- type 304 stainless steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- C**
- C1008 mild steel**
biomimetic manganese on corrosion behavior of, 80
- Calcium hydroxide and solutions**
calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119
- Capacitance**
reinforcing steel in concrete, galvanostatic pulse measurements, 48
- steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127
- Carbide precipitation**
type 304 stainless steel, effect of cold work quantitative discrimination by image analysis, 243
- Carbon and carbon alloys. See also Alloys and alloying**
hydrogen-assisted cracking, numerical model, 611
- iron-based hardfacing alloys, corrosion resistance, electrochemical potentiokinetic tests, 849
- type 347 stainless steel, carbon and nitrogen effects on sensitization resistance, 289
- Carbon dioxide and solutions**
chromium-containing steels, alloying elements on carbon dioxide corrosion in, 419
- hydrogen sulfide pressure, pressurizing autoclaves, 167
- low-alloy carbon steels, gaseous carbon dioxide, Mossbauer spectroscopy, 832
- Carbon dioxide corrosion**
flow velocity, effect of, in oil and gas environments, 860
- Carbon steel. See also by name; by type; by UNS number; Steel**
carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860
- carbon steel, corrosion inhibition in phosphoric acid, 2-mercaptobenzoxazole, 1083
- corrosion, carbon steel with chloride ions, crevice effect, simulated concrete pore solutions, 979
- electrochemical behavior of rust, wet/dry environments, 935
- environmental variables on localized corrosion, 505
- high-level waste container, welding and heat treatment in salt brines, 1071
- lithium bromide absorption refrigeration systems, model for corrosion of, 543

- low-alloy carbon steel, gaseous carbon dioxide saturated solutions, Mossbauer spectroscopy, 832
- scratching, galvanic corrosion in oil and gas environments, effect of, 183
- steel weldments, localized corrosion of carbon steel, 1272
- weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202
- Carbon steel weldments**
steel weldments, localized corrosion of carbon steel, 1272
- Carbonaceous gases**
nickel-based alloys, 801
- Carburization**
nickel-based alloys, carbonaceous gas, 801
- Cathode**
galvanized steels, organic coatings, remote cathodes, cut edges, 492
- Cathodic disbonding**
coated steel, blistering on current demand, cathodic protection, 256
- Cathodic E-coat**
aluminum alloys, corrosion protection, system approach interface engineering, 819, 1032
- Cathodic polarization**
steel in seawater, potential-current density, 3
- zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523
- Cathodic protection**
buried structures, boundary element models, coupon effectiveness, 794
- cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350
- coated steel, blistering on current demand, 256
- crevice, transport process and current distribution modeling, 783
- magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380
- mean current density, offshore structures, 988
- pipelines, simulation of coating failures on cathodically protected, 1180
- reinforced concrete, humectant use in cathodic protection of, 1140
- steel in seawater, potential-current density, cathodic polarization, 3
- Caustic corrosion**
boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158
- Cavities**
corrosion control inside confined spaces, rigid polyurethane foams related to, 757
- Cement. See Concrete**
- Cementite**
low-alloy carbon steels, gaseous carbon dioxide saturated solutions, Mossbauer spectroscopy, 832
- Centrifugal force**
erosion-corrosion, local flow models in predicting distributions, 116
- Ceramic coatings**
functionally gradient material, erosion-corrosion, 654
- Chaos analysis**
stainless steel, electrochemical noise, stress corrosion cracking in u-bend, slow rate load test, 921
- Characterization**
iron-silicon alloys, stability and electrochemical properties of passive layers, 1195
- Charge-transfer resistance**
steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127
- Chloride and chloride solutions**
atmospheric pressure, fluidized bed combustion, burning high-chloride coals, convection section, 298
- carbon steel with chloride ions, electrochemical behavior of rust, wet/dry environments, 935
- chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960
- corrosion of steel, crevice effect in simulated concrete pore solutions, 979
- microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867
- reinforced concrete, migrating corrosion inhibitor blend, 986
- reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy, 727
- scanning combination microelectrodes, in-situ imaging, 41
- stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of, 411
- stainless steels, stress corrosion cracking, based on repassivation kinetics, 32
- visualizing corrosion, 971
- waste materials, electrochemical approach, localized corrosion, 90
- zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523
- Chromate**
type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361
- Chromate conversion coatings**
aluminum alloy, pitting corrosion, 227
- Chromium and chromium alloys. See also Alloys and alloying**
alloy 600 in high-temperature water, intergranular attack, stress corrosion cracking, 572
- alloy 600, stress corrosion cracking, oxide film, high-temperature water, 623
- alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265
- cockles, lacquered tinplate cans in brine solution in contact with, 429
- functionally gradient material, ceramics, erosion-corrosion, 654
- iron-based hardfacing alloys, corrosion resistance, electrochemical potentiokinetic tests, 849
- iron-chromium-nickel alloys, high-purity, transpassive condition, 70
- low-alloy carbon steels, gaseous carbon dioxide saturated solutions, Mossbauer spectroscopy, 832
- steels, alloying elements on carbon dioxide corrosion in, 419
- tinplate, chrome-free passivation method used in canning industry, 700
- Chromium depletion**
alloy 690, intergranular stress corrosion cracking of, 1133
- Chromium steel. See also by name; by type; by UNS number; Steel**
modified, in wet hydrogen sulfide environments, cracking conditions in, 533
- Coal**
atmospheric pressure, fluidized bed combustion, burning high-chloride coals, convection section, 298
- Coating failures**
pipelines, simulation of coating failures on cathodically protected, 1180

Coatings. *See also Ceramic; Chromate conversion; Electrodeposited; Epoxy; Nickel-chromium; Organic; Parylene; Polymer; Polyvinyl chloride; Thermal spray*
AA2024-T3. electrochemical screening test for corrosion protective aerospace coatings, 1059
 aluminum alloy, chromate and chromate conversion coatings, pitting corrosion, 227
 pipelines, simulation of coating failures on cathodically protected, 1180
 protective oil coating, underfilm corrosion of, electrochemical testing method, investigation, 722
 steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber, 1220

Cobalt and cobalt alloys. *See also Alloys and alloying*
 iron-based hardfacing alloys, corrosion resistance, electrochemical potentiokinetic tests, 849

Cockles
 lacquered tinplate cans in brine solution in contact with, 429

Cold work
 alloy 600, stress corrosion cracking, processing orientation, 307
 type 304 stainless steel, quantitative discrimination by image analysis, 243

Composites
 aluminum alloy 2024/silicon carbide particle composites, stress corrosion behavior, 646

Computer modeling and simulations
 cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350
 electrochemical noise, frequency analysis of transients, mathematical and computer, 675

Concrete. *See also Reinforced concrete*
 chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960
 corrosion of steel, crevice effect in simulated concrete pore solutions, 979
 migrating inhibitor blend, inhibitor as repair strategy, 727
 reinforcing steel in concrete, galvanostatic pulse measurements, 48
 steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951

Constant strain test
 aluminum alloy 2024/silicon carbide particles composites, stress corrosion behavior, 646

Constituent particles
 aluminum alloys, corrosion fatigue crack initiation in, 1022

Cooling water
 industrial corrosion monitoring, 743

Copper and copper alloys. *See also Alloys and alloying*
 aluminum alloy, chromate and chromate conversion coatings, pitting corrosion, 227
 boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158
 chromium-containing steels, alloying elements on carbon dioxide corrosion in, 419
 copper, corrosion inhibition in hydrochloric acid under flow conditions, 1105
 microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867
 microbiologically influenced corrosion in potable water systems, pH effects, 942

Copper-nickel alloys. *See also Alloys and alloying*
 microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867

Corrosion. *See Atmospheric; Carbon dioxide; Caustic; Cracking; Crevice; Cut-edge; Erosion; Galvanic; Intergranular; Localized; Microbiologically influenced; On-load; Pitting; Steel; Transgranular; Transpassive; Underfilm*

Corrosion elongation curve
 type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361

Corrosion inhibitors
 CAHMT, new corrosion inhibitor, 983
 copper, corrosion inhibition in hydrochloric acid under flow conditions, 1105

Corrosion protection
 aluminum alloys, system approach interface engineering, 819, 1032

Corrosion rate
 polarization resistance method, 199
 reinforcing steel in concrete, galvanostatic pulse measurements, 48

weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202
 zinc-nickel-phosphorus alloy, hydrogen permeation, corrosion resistant, 283

Corrosion resistance
 iron-based hardfacing alloys, electrochemical potentiokinetic tests, 849
 titanium alloy production tubulars for fluoride-containing well service, 1170

Corrosion-mechanical characteristics
 coatings, anticorrosion, antiscalining on titanium alloys by microarc oxidation method, 24

Corrosion-resistant alloys. *See also Alloys and alloying*
 carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860

Coupon
 cathodic protection of buried structures, boundary element models, 794

Crack initiation
 electrochemical noise measurements, pressurized water reactor conditions, 161
 transmission electron microscopic observation, dislocation emission and crack initiation, 515

Crack tip blunting
 linepipe steel with stress corrosion cracking, hydrostatic testing on ductile tearing of, 1050

Cracking. *See also Environmentally-assisted; Hydrogen-assisted; Intergranular; Stress corrosion; Stress-oriented hydrogen-induced*
 chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533

Creep-rupture
 boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158

Crevice corrosion
 biological sulfur cycle and corrosion relationship between, a review, 433
 cathodically protected crevice, transport process and current distribution modeling, 783
 cooling water systems, industrial corrosion monitoring, 743
 corrosion of steel, crevice effect in simulated concrete pore solutions, 979
 galvanic coupling between overpack materials, high-level nuclear waste containers, 598

- stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of. 411
- Critical crevice temperature** stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of. 411
- Critical pitting temperature** stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of. 411
- Critical velocity** carbon dioxide corrosion, effect of flow velocity in oil and gas environments. 860
- Current distribution** cathodically protected crevice, transport process and current distribution modeling. 783
- Current noise** electrochemical noise, measured, influence of electrolyte movement on. 1086
- Current pulse** stainless steels, current and potential fluctuation characteristics in intergranular stress cracking. 1250
- Current transients** electrochemical noise, frequency analysis of transients, mathematical and computer. 675
- stainless steel, electrochemical noise, stress corrosion cracking in u-bend, slow rate load test. 921
- Current-step method** instantaneous corrosion rates, polarization resistance method to determine. 199
- Cut-edge corrosion** galvanized steels, organic coatings, remote cathodes. 492
- Cyclic polarization** microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water. 867
- stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of. 411
- Cyclic voltammetry** linoleate, effect of on electrochemical behavior of stainless steel in phosphate buffer. 684
- D**
- Depolarization** steel in seawater, potential-current density, cathodic polarization. 3
- Design** mean current density, determinant in cathodic protection design, offshore structures. 988
- Dianilis** oil-well and mild steel in hydrochloric acid, effective inhibitors. 156
- Diffusion** reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy. 727
- steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber. 1220
- Digitized images** electrochemical noise, measured, influence of electrolyte movement on. 1086
- Dislocation emission** transmission electron microscopic observation, crack initiation. 515
- Disposal** carbon steel, high-level waste container, welding and heat treatment in salt brines. 1071
- Dissociation** nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures. 1093
- Dissolution. See Transpassive**
- Double-cycle polarization** aluminum alloy 2024/silicon carbide particles composites, stress corrosion behavior. 646
- Double-layer capacitance** stainless steels, current and potential fluctuation characteristics in intergranular stress cracking. 1250
- Driving potential** magnesium-based sacrificial anodes, alloying elements, electrochemical properties. 380
- Ductile tearing** linepipe steel with stress corrosion cracking, hydrostatic testing. 1050
- Duplex stainless steel. See also by name; by type; by UNS number; Stainless steel** borate buffer solution, electrochemical behavior of. 839
- chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in. 533
- Duplex systems** steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber. 1220
- E**
- Electric potential drop** linepipe steel with stress corrosion cracking, hydrostatic testing on ductile tearing of. 1050
- Electrical impedance spectroscopy** galvanized steels, organic coatings, remote cathodes, cut edges. 492
- Electrochemical impedance spectroscopy** AA2024-T3, electrochemical screening test for corrosion, protective aerospace coatings. 1059
- alkaline hydrogen peroxide, titanium corrosion in. 809
- aluminum alloy 2024, pigment-derived inhibitors for. 321
- cockles, lacquered tinplate cans in brine solution in contact with. 429
- copper, microbiologically influenced corrosion in potable water systems, pH effects. 942
- inhibitors, mild steel, oxadiazoles, acidic media. 733
- interfacial factors, model study. 709
- iron, under alternating wet and dry conditions, corrosion of. 470
- linoleate, effect of on electrochemical behavior of stainless steel in phosphate buffer. 684
- mild steel, biomimetic manganese on corrosion behavior of C1008. 80
- noise resistance, transient analysis and simulation of pitting corrosion for estimation of. 928
- polyaniline on aluminum alloys, conducting polymers and corrosion. 401
- steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber. 1220
- steel in concrete and mortar, corrosion monitoring, electrical resistance changes. 951
- titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing. 1233
- Electrochemical kinetics** carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of. 543
- Electrochemical noise** calculations using a three-electrode cell. 273
- frequency analysis of transients, mathematical and computer. 675
- noise resistance, transient analysis and simulation of pitting corrosion for estimation of. 928
- polyaniline on aluminum alloys, conducting polymers and corrosion. 401
- pressurized water reactor conditions. 161

- stainless steel, stress corrosion cracking in u-bend, slow rate load test, 921
- stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- Electrochemical potentiokinetic reactivation**
- iron-based hardfacing alloys, corrosion resistance, 849
- stainless steel, slow strain rate test in high-temperature water, 57
- type 304 stainless steel, effect of cold work quantitative discrimination by image analysis, 243
- type 347 stainless steel, carbon and nitrogen effects on sensitization resistance, 289
- Electrochemical testing**
- protective oil coating, underfilm corrosion of, 722
- Electrochemistry**
- titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233
- Electrodeposited coatings**
- atmospheric corrosion, zinc and zinc alloy coatings, 588
- Electrolyte solutions**
- coatings, anticorrosion, antiscaling on titanium alloys by microarc oxidation method, 24
- Electron probe microanalysis**
- self-healing, protective films, scratched iron surface, 901
- Energy dispersive x-ray analysis**
- microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867
- Environmental conditions**
- zinc-coated steels, galvanic protection distance, 139
- Environmentally-assisted cracking**
- type 304 stainless steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- Epoxy**
- corrosion of steel, crevice effect in simulated concrete pore solutions, 979
- Epoxyphenolic lacquer**
- cockles, lacquered tinplate cans in brine solution in contact with, 429
- Equivalent circuit model**
- electrochemical impedance spectroscopy, interfacial factors, model study, 709
- Erosion-corrosion**
- carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860
- functionally gradient material, ceramics, 654
- local flow models in predicting distributions, 116
- tests under disturbed flow using rotating cylinder with stepped surface, 1005
- F**
- Fatigue crack initiation**
- aluminum alloys, corrosion, 1022
- Femal alloys. See also Alloys and alloying**
- iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339
- Ferric and ferrous alloys and ions. See also Alloys and alloying**
- zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523
- Ferrite**
- duplex stainless steel in borate buffer solution, electrochemical behavior of, 839
- iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339
- Ferrous carbonate and solutions**
- low-alloy carbon steels, gaseous carbon dioxide saturated solutions, Mossbauer spectroscopy, 832
- Films and film formation. See also Oxides; Passive; Protective; Self-healing; Surface**
- copper, microbiologically influenced corrosion in potable water systems, pH effects, 942
- type 304 stainless steel, electrochemical impedance measurement, oxide film formed on, 389
- Finite element analysis**
- hydrogen-assisted cracking, numerical model, 611
- Fissure**
- rail steel, hydrogen blister in, 1046
- Flow and flow conditions**
- carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860
- copper, corrosion inhibition in hydrochloric acid under flow conditions, 1105
- erosion-corrosion, local flow models in predicting distributions, 116
- erosion-corrosion, tests under disturbed flow using rotating cylinder with stepped surface, 1005
- type 304 stainless steel, flow rate, high-temperature aqueous solutions, 482
- Fluidized bed combustion**
- atmospheric pressure, burning high-chloride coals, convection section, 298
- Four-point bend test**
- hydrogen-assisted cracking, numerical model, 611
- Fourier transform infrared reflection spectroscopy**
- self-healing, protective films, scratched iron surface, 901
- Fourier transform infrared spectroscopy**
- functionally gradient materials coatings ceramics, erosion-corrosion, 654
- zinc surfaces, formation of corrosion products exposed to periodic wet-dry conditions, 1256
- G**
- Galvanic anode**
- cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350
- mean current density, determinant in cathodic protection design, offshore structures, 988
- steel in seawater, potential-current density, cathodic polarization, 3
- Galvanic corrosion**
- boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158
- coatings, anticorrosion, antiscaling on titanium alloys by microarc oxidation method, 24
- galvanic coupling between overpack materials, high-level nuclear waste containers, 598
- mild steel, biomimetic manganese on corrosion behavior of C1008, 80
- scratching, galvanic corrosion in oil and gas environments, effect of, 183
- zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523
- Galvanic protection**
- zinc-coated steels, environmental conditions, 139
- Galvanization**
- chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960
- Galvanized steel. See also by name; by type; by UNS number; Steel**
- organic coatings, remote cathodes, cut edges, 492
- Galvanostatic pulse**
- reinforcing steel in concrete, measurements, 48

- Galvanostatic testing**
magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380
- Gasoline**
mild steel, corrosion in mixtures of petroleum distillates and electrolytes, 1266
- Grain boundaries**
alloy 600 in high-temperature water, intergranular attack, stress corrosion cracking, 572
- Gravitational force**
erosion-corrosion, local flow models in predicting distributions, 116
- Grooving**
steel weldments, localized corrosion of carbon steel, 1272
- H**
- Half-cell potential**
steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951
- Hardfacing alloys. See also Alloys and alloying**
iron-based hardfacing alloys, corrosion resistance, electrochemical potentiokinetic tests, 849
- Heat exchangers**
cooling water systems, industrial corrosion monitoring, 743
- Heat treatment**
steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951
weathering steel, atmospheric corrosion of quenched, tempered, high-strength, 883
- High temperature**
carbon dioxide and hydrogen sulfide pressure, pressurizing autoclaves, 167
- High-alloy steels. See also by name; by type; by UNS number; Steel**
nickel-based alloys, carbonaceous gas, 801
- High-purity alloys. See also Alloys and Alloying**
iron-chromium-nickel alloys, transpassive condition, 70
- High-temperature water**
alloy 600, in high-temperature water, intergranular attack, stress corrosion cracking, 572
alloy 600, stress corrosion cracking oxide film, 623
alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242
- type 304 stainless steel, electrochemical impedance measurement, oxide film formed on, 389
- type 304 stainless steel, flow rate on flow rate, 482
- High-velocity oxygen fuel**
thermal spray coatings, high-temperature sulfidation, 189
- Holiday**
cathodic protection of buried structures, boundary element models, coupon effectiveness, 794
- Hot spots**
boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158
- Humectant**
reinforced concrete, humectant use in cathodic protection of, 1140
- Hydrobromic acid and solutions. See also Acids and acid solutions**
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Hydrochloric acid and solutions. See also Acids and acid solutions**
alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid and oxygen, 265
CAHMT, new corrosion inhibitor, 983
copper, corrosion inhibition in hydrochloric acid under flow conditions, 1105
dianil, oil-well and mild steel in effective inhibitors, 156
inhibitors, mild steel, oxadiazoles, acidic media, 733
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
type 304 stainless steel, chromate and molybdate stress corrosion cracking, 361
- Hydrofluoric acid and solutions. See also Acids and acid solutions**
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Hydrogen and hydrogen alloys. See also Alloys and alloying**
calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119
- hydrogen-assisted cracking, numerical model, 611
rail steel, initiation of fissure from hydrogen blister in, 1046
titanium alloy production tubulars for fluoride-containing well service, 1170
- Hydrogen-assisted cracking**
numerical model, 611
- Hydrogen embrittlement**
chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533
zinc-nickel-phosphorus alloy, hydrogen permeation, corrosion resistant, 283
- Hydrogen permeation**
zinc-nickel-phosphorus alloy, corrosion resistant, 283
- Hydrogen peroxide**
titanium corrosion, 809
type 304 stainless steel, electrochemical impedance measurement, oxide film formed on, 389
- Hydrogen sulfide and solutions**
carbon dioxide and hydrogen sulfide pressure, pressurizing autoclaves, 167
chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533
- Hydrogen uptake**
hydrogen-assisted cracking, numerical model, 611
- Hydrogenated water**
alloy 600, stress corrosion cracking oxide film, high-temperature water, 623
- Hydrostatic testing**
linepipe steel with stress corrosion cracking, ductile tearing, 1050
- I**
- Image analysis and imaging**
chloride ions, scanning combination microelectrodes, in-situ imaging, 41
type 304 stainless steel, effect of cold work quantitative discrimination, 243
- Imidazole derivatives**
copper, corrosion inhibition in hydrochloric acid under flow conditions, 1105
- Immersion testing**
carbon steel, corrosion inhibition in phosphoric acid, 2-mercaptopbenzoxazole, 1083
- Impedance**
carbon steel with chloride ions, electrochemical behavior of rust, wet/dry environments, 935
instantaneous corrosion rates, polarization resistance method to determine, 199

- titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233
- type 304 stainless steel, electrochemical impedance measurement, oxide film formed on, 389
- Impurity**
high-purity iron-chromium-nickel alloys, effect of silicon, manganese on transpassive corrosion, 910
- iron-chromium-nickel alloys, high-purity, transpassive condition, 70
- type 304 steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- Industrial applications and environments**
cooling water systems, industrial corrosion monitoring, 743
- Infrared spectroscopy**
nickel metal, by hydrothermal sodium tungstate solution, 501
- Inhibition and inhibition efficiency**
barium sulfate deposition and precipitation using electrochemical surface, bulk solution, 638
- carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543
- dianil, oil-well and mild steel in hydrochloric acid, effective inhibitors, 156
- linoleate, effect of on electrochemical behavior of stainless steel in phosphate buffer, 684
- mild steel, oxadiazoles, acidic media, 733
- steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127
- tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211
- Inhibitors**
aluminum alloy 2024, pigment-derived inhibitors for, 321
- carbon steel, corrosion inhibition in phosphoric acid, 2-mercaptopbenzoxazole, 1083
- dianil, oil-well and mild steel in hydrochloric acid, 156
- mild steel, oxadiazoles, acidic media, 733
- reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy, 727
- vapor phase inhibitors, an overview, 144
- Instantaneous corrosion rate**
polarization resistance method to determine, 199
- Interfacial factors**
electrochemical impedance spectroscopy, model study, 709
- Intergranular attack and corrosion**
alloy 600 in high-temperature water, stress corrosion cracking, 572
- alloy 690, intergranular stress corrosion cracking of, 1133
- aluminum alloy 6056, influence of overaging treatment on localized corrosion, 12
- high-purity iron-chromium-nickel alloys, effect of silicon, manganese on transpassive corrosion, 910
- iron-chromium-nickel alloys, high-purity, transpassive condition, 70
- type 304 stainless steel, effect of cold work quantitative discrimination by image analysis, 243
- Intergranular cracking**
type 304 steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- Intergranular stress corrosion cracking**
stainless steel, slow strain rate test in high-temperature water, 57
- stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- type 304 stainless steel, neutron-irradiated, 451
- type 304 stainless steel, flow rate on flow rate, high-temperature aqueous solutions, 482
- Intermetallics**
aluminum alloy 6056, influence of overaging treatment on localized corrosion, 12
- aluminum alloy, chromate and chromate conversion coatings, pitting corrosion, 227
- Iron aluminide and solutions**
thermal spray coatings, high-temperature sulfidation, 189
- Iron and iron alloys. See also Alloys and alloying**
calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119
- corrosion resistance, electrochemical potentiokinetic tests, 849
- iron-chromium-nickel alloys, high-purity, transpassive condition, 70
- iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339
- iron-silicon alloys, stability and electrochemical properties of passive layers, 1195
- self-healing, protective films, scratched iron surface, 901
- Iron oxides**
under alternating wet and dry conditions, corrosion of, 470
- Iron oxyhydroxides**
iron, under alternating wet and dry conditions, corrosion of, 470
- Irradiation-assisted stress corrosion cracking**
type 304 stainless steel, intergranular stress corrosion cracking, neutron-irradiated, 451
- type 304 steel, crack growth in primary water, solution-annealed steels, 460
- J**
- J integral**
linepipe steel with stress corrosion cracking, hydrostatic testing on ductile tearing of, 1050
- K**
- Kinetic-thermodynamic model**
steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127
- Kinetics**
carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543
- martensitic stainless steels, kinetics of passive film formation on, 694
- L**
- Laminar flow**
electrochemical noise, measured, influence of electrolyte movement on, 1086
- Leptothrix discophora SP-6**
mild steel, biomimetic manganese on corrosion behavior of C1008, 80
- Linear polarization**
iron, under alternating wet and dry conditions, corrosion of, 470
- microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867
- reinforcing steel in concrete, galvanostatic pulse measurements, 48
- steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951
- Linear polarization resistance**
alkaline hydrogen peroxide, titanium corrosion in, 809
- electrochemical noise resistance, calculations using a three-electrode cell, 273
- instantaneous corrosion rates, polarization resistance method to determine, 199
- Linoleate**
stainless steel, electrochemical behavior in phosphate buffer, 684

- Lithium bromide and solutions**
carbon steel, refrigeration systems, model for corrosion of, 543
reinforced concrete, humectant use in cathodic protection of, 1140
- Lithium nitrate and solutions**
reinforced concrete, humectant use in cathodic protection of, 1140
- Localized attack and corrosion**
aluminum alloy 6056, influence of overaging treatment, 12
carbon steel, environmental variables, 505
chloride ions, scanning combination microelectrodes, in-situ imaging, 41
cooling water systems, industrial corrosion monitoring, 743
electrochemical noise, measured, influence of electrolyte movement on, 1086
galvanic coupling between overpack materials, high-level nuclear waste containers, 598
steel weldments, localized corrosion of carbon steel, 1272
visualizing corrosion, 971
waste materials, electrochemical approach, 90
zinc surfaces, formation of corrosion products exposed to periodic wet-dry conditions, 1256
- Loop tester**
carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860
- Low-alloy carbon steels. See also by name; by type; by UNS number; Steel**
gaseous carbon dioxide saturated solutions, Mossbauer spectroscopy, 832
- Low-conductivity soil**
cathodically protected crevice, transport process and current distribution modeling, 783
- Low-temperature plasma process**
aluminum alloys, corrosion protection, system approach interface engineering, 1032
aluminum alloys, improved corrosion protection, system approach interface engineering, 819
- M**
- Magnesium and magnesium alloys. See also Alloys and alloying**
magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380
- Magnesium anode**
steel in seawater, potential-current density, cathodic polarization, 3
- Manganese and manganese alloys. See also Alloys and alloying**
high-purity iron-chromium-nickel alloys, effect of silicon, transpassive corrosion, 910
iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339
- Manganese dioxide and solutions**
mild steel, biomimetic manganese on corrosion behavior of C1008, 80
- Marine applications and environments. See also Aqueous solutions and environments; Offshore platforms and structures; Seawater; Sodium chloride and solutions**
cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350
steel in seawater, potential-current density, cathodic polarization, 3
- Martensitic stainless steel. See also by name; by type; by UNS number; Stainless steel**
kinetics of passive film formation on, 694
- Matrix**
aluminum alloy 2024/silicon carbide particle composites, stress corrosion behavior, 646
- Mean current density**
offshore structures, determinant in cathodic protection design, 988
- Mechanical properties**
titanium alloy production tubulars for fluoride-containing well service, 1170
- Mechanical scratch**
scratching, galvanic corrosion in oil and gas environments, effect of, 183
- Metal dusting**
nickel-based alloys, carbonaceous gas, 801
- Metallurgy**
low-alloy carbon steels, gaseous carbon dioxide saturated solutions, Mossbauer spectroscopy, 832
- Methanol**
titanium alloy production tubulars for fluoride-containing well service, 1170
- Microarc oxidation**
coatings, anticorrosion, antiscaling on titanium alloys, 24
- Microbiologically influenced corrosion. See also Sulfate-reducing bacteria; Sulfur-oxidizing bacteria**
copper, in potable water systems, pH effects, 942
- mild steel, biomimetic manganese on corrosion behavior of C1008, 80
- Microprobe analysis**
tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211
- Microstructure**
duplex stainless steel in borate buffer solution, electrochemical behavior of, 839
steel weldments, localized corrosion of carbon steel, 1272
type 347 stainless steel, carbon and nitrogen effects on sensitization resistance, 289
- Migrating corrosion inhibitor**
reinforced concrete, 986
- Mild steel. See also by name; by type; by UNS number; Steel**
biomimetic manganese on corrosion behavior of C1008, 80
CAHMT, new corrosion inhibitor, 983
dianil, oil-well and mild steel in hydrochloric acid, effective inhibitors, 156
electrochemical noise resistance, calculations using a three-electrode cell, 273
inhibitors, oxadiazoles, acidic media, 733
mild steel, corrosion in mixtures of petroleum distillates and electrolytes, 1266
mild steel in acetic acid solutions, corrosion behavior of, 371
reinforced concrete, migrating corrosion inhibitor blend, 986
reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy, 727
reinforcing steel in concrete, galvanostatic pulse measurements, 48
- Mixed-type inhibitors**
steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127
- Modeling. See also Analytical model; Computer modeling and simulations; Equivalent circuit; Kinetic thermodynamic; Neural network; Numerical modeling and simulations**
carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543
cathodically protected crevice, transport process and current distribution modeling, 783
electrochemical impedance spectroscopy, interfacial factors, 709
pressurized water reactors, stress corrosion cracking in, interpretation, remedies, 771

Molybdate

self-healing, protective films, scratched iron surface, 901 type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361

Molybdenum and molybdenum alloys. See also Alloys and alloying

alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265 chromium-containing steels, alloying elements on carbon dioxide corrosion in, 419

Monitoring

cooling water systems, industrial corrosion monitoring, 743 microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867

Mortar

steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951

Mossbauer spectroscopy

low-alloy carbon steels, gaseous carbon dioxide saturated solutions, 832

Multiple wire electrode

protective oil coating, underfilm corrosion of, electrochemical testing method of, 722

N**N-80 steel. See also by name; by type; by UNS number; Steel**

CAHMT, new corrosion inhibitor, 983

Naphtha

mild steel, corrosion in mixtures of petroleum distillates and electrolytes, 1266

Neural network

aluminum pitting, natural waters, 563

Neutron irradiation

type 304 stainless steel, intergranular stress corrosion cracking, 451

Nickel and nickel alloys. See also Alloys and alloying

alloy 600 in high-temperature water, intergranular attack, stress corrosion cracking, 572 alloy 600, stress corrosion cracking oxide film, high-temperature water, 623 alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265 carbonaceous gas, 801 chromium-containing steels, alloying elements on carbon dioxide corrosion in, 419

functionally gradient material, ceramics erosion-corrosion, 654 iron-chromium-nickel alloys, high-purity, transpassive condition, 70 microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867 nickel metal, by hydrothermal sodium tungstate solution, in-situ infrared spectroscopy, 501 nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093 pressurized water reactors, stress corrosion cracking in, interpretation, modeling, remedies, 771 waste materials, electrochemical approach, localized corrosion, 90

Nickel-chromium coatings

functionally gradient material, ceramics erosion-corrosion, 654

Nitric acid and solutions. See also Acids and acid solutions

high-purity iron-chromium-nickel alloys, effect of silicon, manganese on transpassive corrosion, 910 iron-chromium-nickel alloys, high-purity, transpassive condition, 70 nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093

Nitrite and nitrate and solutions

aluminum in sodium chloride solution, effect of sulfate and nitrate additives on pit growth of, 1015

Nitrogen and nitrogen alloys. See also Alloys and alloying

type 347 stainless steel, carbon and nitrogen effects on sensitization resistance, 289

Noble metal

stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242

Noise

electrochemical noise, measured, influence of electrolyte movement on, 1086

Noise resistance

electrochemical noise resistance, calculations using a three-electrode cell, 273 instantaneous corrosion rates, polarization resistance method to determine, 199

transient analysis and simulation of pitting corrosion for estimation of, 928

Nuclear applications and environments

waste materials, electrochemical approach, localized corrosion, 90

Nuclear applications and environments. See also Radioactivity and radiation; Spent nuclear fuel

waste materials, electrochemical approach, localized corrosion, 90

Numerical modeling and simulations

hydrogen-assisted cracking, 611 pipelines, simulation of coating failures on cathodically protected, 1180

O**Offshore platforms and structures.**

See also Marine applications and environments; Oil and gas; Seawater

mean current density, determinant in cathodic protection design, 988

steel in seawater, potential-current density, cathodic polarization, 3

Oil and gas. See also Offshore platforms and structures; Pipelines and linepipe steel

carbon dioxide and hydrogen sulfide pressure, pressurizing autoclaves, 167

carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860

chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533

scratching, galvanic corrosion, effect of, 183

Oil country tubular goods

carbon dioxide corrosion, effect of flow velocity in oil and gas environments, 860

chromium-containing steels, alloying elements on carbon dioxide corrosion in, 419

scratching, galvanic corrosion effect of, 183

Oil-well steel. See also by name; by type; by UNS number; Steel

dianils, oil-well and mild steel in hydrochloric acid, effective inhibitors, 156

On-load corrosion

boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158

Open-circuit potential

aluminum alloy, chromate and chromate conversion coatings, pitting corrosion, 227
carbon steel, environmental variables on localized corrosion on, 505
microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867
steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951

Optical microscopy

rail steel, initiation of fissure from hydrogen blister in, 1046

Organic coatings

coated steel, cathodic disbonding, blistering on current demand, cathodic protection, 256
galvanized steels, remote cathodes, cut edges, 492

Organic corrosion inhibitor

reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy, 727

Overaging

aluminum alloy 6056, localized corrosion, 12

Overpotential

calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119

Oxadiazoles

inhibitors, mild steel, acidic media, 733

Oxidation. See also Microarc;**Supercritical water**

duplex stainless steel in borate buffer solution, electrochemical behavior of, 839
iron-manganese-aluminum alloys, high-temperature oxidation, two-phase, 339

Oxides and oxide films. See also Films and film formation; Iron oxides; Spinel oxides; Zirconium oxide coating

boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158
titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

Oxygen and oxygen alloys. See also Alloys and alloying

cathodic protection of buried structures, boundary element models, coupon effectiveness, 794

Oxygen diffusion

steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber, 1220

Oxygen reduction reaction kinetics

aluminum alloy, chromate and chromate conversion coatings, pitting corrosion, 227

P**Paint-undercutting accelerated test**

galvanized steels, organic coatings, remote cathodes, cut edges, 492

Parylene coatings

electrochemical impedance spectroscopy, interfacial factors, model study, 709

Passivation and passivity

alkaline hydrogen peroxide, titanium corrosion in, 809
duplex stainless steel in borate buffer solution, electrochemical behavior of, 839

iron-silicon alloys, stability and electrochemical properties of passive layers, 1195

tinplate, chrome-free passivation method used in canning industry, 700

titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523

Passive films

martensitic stainless steels, kinetics, 694

passive film-induced tensile stress, stress corrosion cracking caused by, 1112

Passive layer

stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of, 411

Pearlitic steel. See also by name; by type; by UNS number; Steel

calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119

Perhydroxyl ion

alkaline hydrogen peroxide, titanium corrosion in, 809

Permeation

calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119

Petroleum distillate-electrolyte mixture

mild steel, corrosion in mixtures of petroleum distillates and electrolytes, 1266

pH

aluminum pitting, prediction of via artificial neural network, natural waters, 563

calcium hydroxide, hydrogen absorption in iron, steel, electrochemical reduction of water, 1119

carbon steel, environmental variables

on localized corrosion on, 505

chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533

copper, microbiologically influenced corrosion in potable water systems, 942
martensitic stainless steels, kinetics

of passive film formation on, 694
nickel metal, by hydrothermal

sodium tungstate solution, in-situ infrared spectroscopy, 501
visualizing corrosion, 971

Phosphoric acid and solutions. See also Acids and acid solutions

Al-2024T-3 surfaces for painting preparation, surface analysis of various methods, 395

carbon steel, corrosion inhibition in phosphoric acid, 2-mercaptobenzoxazole, 1083

nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093

steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127

Phosphorus and phosphorus alloys. See also Alloys and alloying

type 304 steel, irradiated, crack growth in primary water, solution-annealed steels, 460

Photoelectrochemistry

titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

Pickling solutions

alkaline hydrogen peroxide, titanium corrosion in, 809

Pipelines and linepipe steel. See also by name; by type; by UNS number; Oil and gas; Steel

cathodic protection of buried structures, boundary element models, coupon effectiveness, 794

cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350

linepipe steel with stress corrosion cracking, hydrostatic testing on ductile tearing of, 1050

pipelines, simulation of coating failures on cathodically protected, 1180

Pit growth

aluminum in sodium chloride solution, effect of sulfate and nitrate additives, 1015

Pit morphology and simulation

zirconium, simple immersion conditions in oxidizing chloride solutions, 523

Pitting corrosion. See also Critical pitting temperature

alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265 aluminum alloy 2024/silicon carbide particles composites, stress corrosion behavior, 646 aluminum alloy 6056, influence of overaging treatment on localized corrosion, 12 aluminum alloys, corrosion fatigue crack initiation in, 1022

aluminum pitting, prediction of via artificial neural network, natural waters, 563

biological sulfur cycle and corrosion relationship between, a review, 433

cooling water systems, industrial corrosion monitoring, 743

galvanic coupling between overpack materials, high-level nuclear waste containers, 598 noise resistance, transient analysis and simulation of pitting corrosion for estimation of, 928

reinforced concrete, migrating corrosion inhibitor blend, 986

reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy, 727

zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523

Pitting potential

aluminum alloy, chromate and chromate conversion coatings, pitting corrosion, 227

chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533

Plasma spray

functionally gradient material, ceramics erosion-corrosion, 654

Plasma treatment

electrochemical impedance spectroscopy, interfacial factors, model study, 709

Polarization and polarization resistance. See also Anodic polarization; Cathodic polarization; Cyclic polarization; Double-cycle polarization; Linear polarization; Potentiodynamic; Potentiodynamic linear polarization; Potentiostatic polarization

corrosion of steel, crevice effect in simulated concrete pore solutions, 979

duplex stainless steel in borate buffer solution, electrochemical behavior of, 839

stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242

type 304 stainless steel, electrochemical impedance measurement, oxide film formed on, 389

Polarization testing

inhibitors, mild steel, oxadiazoles, acidic media, 733

microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867

steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951

Polyaniline

aluminum alloys, conducting polymers and corrosion, 401

Polymer foams

corrosion control inside confined spaces, rigid polyurethane foams related to, 757

Polymers and polymer coatings

polyaniline on aluminum alloys, conducting polymers and corrosion, 401

Polyurethane foams

corrosion control inside confined spaces, 757

Polyvinyl chloride coatings

galvanized steels, organic coatings, remote cathodes, cut edges, 492

Potential attenuation

cathodically polarized marine pipelines, risers, anode current output, 350

Potential fluctuation

stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250

Potential noise

electrochemical noise, measured, influence of electrolyte movement on, 1086

Potential transient

zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523

Potential-step method

instantaneous corrosion rates, 199

Potentiodynamic linear polarization

linoleate, effect of on electrochemical behavior of stainless steel in phosphate buffer, 684

Potentiodynamic method

instantaneous corrosion rates, polarization resistance method to determine, 199

Potentiodynamic polarization

CAHMT, new corrosion inhibitor, 983

dianil, oil-well and mild steel in hydrochloric acid, effective inhibitors, 156

inhibitors, mild steel, oxadiazoles, acidic media, 733

steel, effect of thiosemicarbazones, in phosphoric acid produced by wet process, 127

Potentiodynamic polarography

alkaline hydrogen peroxide, titanium corrosion in, 809

Potentiodynamic testing

magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380

Potentiostatic polarization

mild steel in acetic acid solutions, corrosion behavior of, 371

Potentiostatic step method

martensitic stainless steels, kinetics of passive film formation on, 694

Potentiostatic testing

magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380

Power spectral density

electrochemical noise, frequency analysis of transients, mathematical and computer, 675

instantaneous corrosion rates, polarization resistance method to determine, 199

Precipitate and precipitation

barium sulfate deposition using electrochemical surface, bulk solution, 638

Prediction

carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543

type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361

Pressure

nickel metal, by hydrothermal sodium tungstate solution, in-situ infrared spectroscopy, 501

Pressurized water reactors

alloy 600, stress corrosion cracking oxide film, high-temperature water, 623

electrochemical noise measurements, 161

stress corrosion cracking in, interpretation, modeling, remedies, 771

type 304 steel, irradiated, crack growth in primary water, solution-annealed steels, 460

Primary water

type 304 steel, irradiated, crack growth, solution-annealed steels, 460

Primary water stress corrosion cracking

alloy 600, stress corrosion cracking oxide film, high-temperature water, 623

Production tubulars

titanium alloy production tubulars for fluoride-containing well service, 1170

Protective films

self-healing, scratched iron surface, 901

Q**Quantitative metallography**

type 304 stainless steel, effect of cold work image analysis, 243

Quench and temper

weathering steel, atmospheric corrosion, 883

R**Radioactivity and radiation**

carbon steel, environmental variables on localized corrosion on, 505

Radionuclides

waste materials, electrochemical approach, localized corrosion, 90

Rail steel

initiation of fissure from hydrogen blister in, 1046

Raman spectroscopy

iron, under alternating wet and dry conditions, corrosion of, 470

Rebar

chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960

steel, crevice effect in simulated concrete pore solutions, 979

Recombination kinetics

stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242

Redox potential

chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533

Refrigeration

carbon steel, lithium bromide absorption model for corrosion of, 543

Reinforced concrete

migrating corrosion inhibitor blend, 986

reinforced concrete, humectant use in cathodic protection of, 1140

Reinforcing bars

chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960

Repassivation

carbon steel, environmental variables

on localized corrosion on, 505 stainless steels, high-alloy, pH and chloride concentration, pitting and crevice corrosion of, 411

Repassivation kinetics

stainless steels, stress corrosion cracking, 32

Repassivation potential

waste materials, electrochemical approach, localized corrosion, 90

Resistance. See Charge-transfer; Corrosion; Noise; Polarization; Solution; Spectral noise**Resistance change measurements**

steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951

Retarding effect

stainless steel, effects of electrolytic zirconium oxide coating on hydrogen permeation of, 998

Rotating cylinder electrode

erosion-corrosion, tests under disturbed flow, 1005

Rotating disk electrode

barium sulfate deposition and precipitation using electrochemical surface, bulk solution, 638

Rust

carbon steel with chloride ions, electrochemical behavior of rust, wet/dry environments, 935 weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202

Rutile

titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

S**Sacrificial anode**

magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380

Salt brines

carbon steel, high-level waste container, welding and heat treatment, 1071

Salt spray testing

AA2024-T3, electrochemical screening test for corrosion protective aerospace coatings, 1059 aluminum alloys, corrosion protection, system approach interface engineering, 887

steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber, 1220

Scale

barium sulfate deposition and precipitation using electrochemical surface, bulk solution, 638 coatings, anticorrosion, antiscalings on titanium alloys by microarc oxidation method, 24

Scanning chloride ion-selective microelectrode

chloride ions, in-situ imaging, 41

Scanning electron microscopy

Al-2024T-3 surfaces for painting preparation, surface analysis of various methods, 395

magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380

microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867

nickel metal, by hydrothermal sodium tungstate solution, in-situ infrared spectroscopy, 501

weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202

Scanning vibrating electrode technique

galvanized steels, organic coatings, remote cathodes, cut edges, 492

steel weldments, localized corrosion of carbon steel, 1272

Scratch

self-healing, protective films, scratched iron surface, 901

Scratching electrode technique

stainless steels, stress corrosion cracking, based on repassivation kinetics, 32

Seawater. See also Marine applications and environments; Offshore platforms and structures; Sodium chloride and solutions

cathodically polarized marine pipelines, risers, potential attenuation, anode current output, 350

coatings, anticorrosion, antiscalings on titanium alloys by microarc oxidation method, 24

corrosion control inside confined spaces, rigid polyurethane foams related to, 757

mean current density, determinant in cathodic protection design, offshore structures, 988 steel, potential-current density, cathodic polarization, 3

- tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211
- Segregation** high-purity iron-chromium-nickel alloys, effect of silicon, manganese on transpassive corrosion, 910
- iron-chromium-nickel alloys, high-purity, transpassive condition, 70
- Self-healing films** protective films, scratched iron surface, 901
- Sensitization** alloy 690, intergranular stress corrosion cracking of, 1133
- iron-based hardfacing alloys, corrosion resistance, electrochemical potentiokinetic tests, 849
- stainless steel, electrochemical noise, stress corrosion cracking in u-bend, slow rate load test, 921
- stainless steel, slow strain rate test in high-temperature water, 57
- stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- type 304 stainless steel, effect of cold work quantitative discrimination by image analysis, 243
- type 304 stainless steel, flow rate on flow rate, high-temperature aqueous solutions, 482
- type 347 stainless steel, carbon and nitrogen effects, 289
- Short-circuit current** stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- Silicon and silicon alloys. See also Alloys and alloying** high-purity iron-chromium-nickel alloys, effect of silicon, manganese on transpassive corrosion, 910
- iron-silicon alloys, stability and electrochemical properties of passive layers, 1195
- type 304 steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- Silicon carbide and particulates** aluminum alloy 2024/silicon carbide particle composites, stress corrosion behavior, 646
- Simple immersion** zirconium, in oxidizing chloride solutions, pit simulation, 523
- Slope parameter** mean current density, determinant in cathodic protection design, offshore structures, 988
- Slow strain rate test** stainless steel, in high-temperature water, 57
- stainless steel, electrochemical noise, stress corrosion cracking in u-bend, slow rate load test, 921
- stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
- stainless steels, stress corrosion cracking, based on repassivation kinetics, 32
- type 304 stainless steel, intergranular stress corrosion cracking, neutron-irradiated, 451
- Sodium acetate and solutions** mild steel in acetic acid solutions, corrosion behavior of, 371
- Sodium chloride and solutions** aluminum alloy 2024, pigment-derived inhibitors for, 321
- aluminum alloy 2024/silicon carbide particles composites, stress corrosion behavior, 646
- aluminum alloy 6056, influence of overaging treatment on localized corrosion, 12
- aluminum, effect of sulfate and nitrate additives on pit growth of, 1015
- carbon steel with chloride ions, electrochemical behavior of rust, wet/dry environments, 935
- galvanized steels, organic coatings, remote cathodes, cut edges, 492
- nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Sodium hydroxide and solutions** nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Sodium sulfate and solutions** nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Soil** cathodically protected crevice, transport process and current distribution modeling, 783
- Solubility** nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Solution resistance** instantaneous corrosion rates, polarization resistance method to determine, 199
- Sour environments** chromium steel, modified, in wet hydrogen sulfide environments, cracking conditions in, 533
- scratching, galvanic corrosion in oil and gas environments, effect of, 183
- Sour gas** titanium alloy production tubulars for fluoride-containing well service, 1170
- Spectral analysis** electrochemical noise, measured, influence of electrolyte movement on, 1086
- stainless steel, electrochemical noise, stress corrosion cracking in u-bend, slow rate load test, 921
- Spectral noise resistance** electrochemical noise resistance, calculations using a three-electrode cell, 273
- instantaneous corrosion rates, polarization resistance method to determine, 199
- Spent nuclear fuel** aluminum pitting, prediction of via artificial neural network, natural waters, 563
- Spinel oxides** alloy 600, stress corrosion cracking oxide film, high-temperature water, 623
- Stainless steel. See also Austenitic; by name; by type; by UNS number; Duplex; Martensitic; Steel; Supermartensitic** alloy 600, stress corrosion cracking oxide film, high-temperature water, 623
- chromium-containing steels, alloying elements on carbon dioxide corrosion in, 419
- electrochemical noise measurements, pressurized water reactor conditions, 161
- electrochemical noise resistance, calculations using a three-electrode cell, 273
- electrochemical noise, stress corrosion cracking in u-bend, slow rate load test, 921
- galvanized steels, organic coatings, remote cathodes, cut edges, 492
- linoleate, effect of on electrochemical, phosphate buffer, behavior of stainless steel in, 684
- nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- reinforcing steel in concrete, galvanostatic pulse measurements, 48

- scratching, galvanic corrosion in oil and gas environments, effect of, 183
- stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242
- waste materials, electrochemical approach, localized corrosion, 90
- Steady-state elongation rate**
type 304 stainless steel, chromate and molybdate stress corrosion cracking, hydrochloric acid, 361
- Steam generators**
alloy 600, stress corrosion cracking oxide film, high-temperature water, 623
- Steel. See also by name; by type; by UNS number; Carbon; Galvanized; High-alloy; Mild; N-80; Oil-well; Pearlitic; Pipelines and linepipe; Rail; Stainless; Weathering**
coated steel, cathodic disbonding, blistering on current demand, cathodic protection, 256
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
seawater, potential-current density, cathodic polarization, 3
stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242
stainless steels, current and potential fluctuation characteristics in intergranular stress cracking, 1250
steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber, 1220
tinplate, chrome-free passivation method used in canning industry, 700
zinc-coated steels, galvanic protection distance, environmental conditions, 139
- Steel corrosion**
corrosion control inside confined spaces, rigid polyurethane foams related to, 757
- Steel reinforcement**
concrete, galvanostatic pulse measurements, 48
reinforced concrete, migrating inhibitor blend, inhibitor as repair strategy, 727
- Stirring**
electrochemical noise, measured, influence of electrolyte movement on, 1086
- Stress corrosion cracking. See also Cracking; Intergranular; Irradiation-assisted; Primary water; Transgranular**
alloy 600, effect of cold work and processing orientation, 307
alloy 600 in high-temperature water, intergranular attack, 572
alloy 690, intergranular stress corrosion cracking of, 1133
aluminum alloy 2024/silicon carbide particles composites, stress corrosion behavior, 646
biological sulfur cycle and corrosion relationship between, a review, 433
linepipe steel, hydrostatic testing on ductile tearing of, 1050
passive film-induced tensile stress, stress corrosion cracking caused by, 1112
pressurized water reactors, interpretation, modeling, remedies, 771
stainless steel, electrochemical noise, 921
u-bend, slow rate load test, 921
stainless steels, based on repassivation kinetics, 32
titanium alloy production tubulars for fluoride-containing well service, 1170
transmission electron microscopic observation, dislocation emission and crack initiation, 515
type 304 stainless steel, chromate and molybdate hydrochloric acid, 361
- Stress-oriented hydrogen-induced cracking**
biological sulfur cycle and corrosion relationship between, a review, 433
- Structural assessment**
reinforcing steel in concrete, galvanostatic pulse measurements, 48
- Sulfate and sulfate solutions**
aluminum in sodium chloride solution, effect of sulfate and nitrate additives on pit growth of, 1015
- Sulfate-reducing bacteria**
biological sulfur cycle and corrosion relationship between, a review, 433
microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867
- Sulfidation**
thermal spray coatings, high-temperature, 189
- Sulfides**
steel weldments, localized corrosion of carbon steel, 1272
- Sulfur and sulfur alloys. See also Alloys and alloying**
atmospheric pressure, fluidized bed combustion, burning high-chloride coals, convection section, 298
biological sulfur cycle and corrosion relationship between, a review, 433
type 304 steel, irradiated, crack growth in primary water, solution-annealed steels, 460
- Sulfur-oxidizing bacteria**
biological sulfur cycle and corrosion relationship between, a review, 433
- Sulfuric acid and solutions. See also Acids and acid solutions**
inhibitors, mild steel, oxadiazoles, acidic media, 733
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Supercritical water**
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093
- Supercritical water oxidation**
alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265
- Supermartensitic stainless steels. See also by name; by type; by UNS number; Stainless steel**
hydrogen-assisted cracking, numerical model, 611
- Surface analysis**
Al-2024T-3 surfaces for painting preparation, 395
self-healing, protective films, scratched iron surface, 901
- Surface films**
vapor phase inhibitors, an overview, 144
- Surface pretreatment and treatment**
Al-2024T-3 surfaces for painting preparation, surface analysis of various methods, 395
zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523
- Sweet environments**
scratching, galvanic corrosion in oil and gas environments, effect of, 183
- System approach interface engineering**
aluminum alloys, corrosion protection, 819, 887, 1032

T

Testing. *See Auger electron spectroscopy; Chaos analysis; Constant strain test; Cyclic polarization; Cyclic voltammetry; Electrical impedance spectroscopy; Electrochemical; Electrochemical impedance spectroscopy; Electrochemical potentiokinetic reactivation; Electron probe microanalysis; Energy dispersive x-ray analysis; Finite element analysis; Four-point bend; Fourier transform infrared spectroscopy; Galvanostatic; Hydrostatic; Image analysis and imaging; Infrared spectroscopy; Loop tester; Microprobe analysis; Mossbauer spectroscopy; Optical microscopy; Paint-undercutting accelerated; Polarization; Potentiodynamic; Potentiostatic; Quantitative metallography; Raman spectroscopy; Salt spray; Scanning electron microscopy; Slow strain rate; Spectral analysis; Surface analysis; Thermodynamics; Transient analysis; Transmission electron microscopy; U-bend; X-ray diffraction; X-ray diffractometry; X-ray photoelectron spectroscopy*

Thermal spray and thermal spray coatings
high-temperature sulfidation, 189
reinforced concrete, humectant use in cathodic protection of, 1140

Thermodynamics

carbon steel, lithium bromide absorption refrigeration systems, model for corrosion of, 543

Thiosemicarbazones

steel, in phosphoric acid produced by wet process, 127

Tin and tin alloys. See also Alloys and alloying

zirconium, simple immersion conditions in oxidizing chloride solutions, pit simulation, 523

Tin-bronze

tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211

Tinplate

chrome-free passivation method used in canning industry, 700
cockles, lacquered tinplate cans in brine solution in contact with, 429

Titanium and titanium alloys. See also Alloys and alloying

coatings, anticorrosion, antiscaling on titanium alloys by microarc oxidation method, 24
passive film-induced tensile stress, stress corrosion cracking caused by, 1112
titanium alloy production tubulars for fluoride-containing well service, 1170
titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

Titanium complexes

alkaline hydrogen peroxide, titanium corrosion in, 809

Titanium dioxide

titanium, oxides formed by polishing, etching, anodizing, or thermal oxidizing, 1233

Transgranular corrosion cracking

type 304 stainless steel, effect of cold work quantitative discrimination by image analysis, 243
Transgranular stress corrosion cracking
stainless steel, slow strain rate test in high-temperature water, 57

Transient analysis

noise resistance, simulation of pitting corrosion for estimation of, 928

Transmission electron microscopy
alloy 600 in high-temperature water, intergranular attack,

stress corrosion cracking, 572
dislocation emission and crack initiation, 515

passive film-induced tensile stress, stress corrosion cracking caused by, 1112

rail steel, initiation of fissure from hydrogen blister in, 1046

Transpassive corrosion

high-purity iron-chromium-nickel alloys, effect of silicon, manganese, 910

iron-chromium-nickel alloys, high-purity, 70

Transpassive dissolution

alloy 625, chromium, nickel, molybdenum in water containing hydrochloric acid, oxygen, 265
nickel-based alloys, stainless steels in solutions at sub- and supercritical temperatures, 1093

Transport process

cathodically protected crevice, current distribution modeling, 783

Type 1040 steel

steel in concrete and mortar, corrosion monitoring, electrical resistance changes, 951

Type 304 stainless steel

atmospheric pressure, fluidized bed combustion, burning high-chloride coals, convection section, 298
chromate and molybdate stress corrosion cracking, hydrochloric acid, 361
effect of cold work quantitative discrimination by image analysis, 243
electrochemical impedance measurement, oxide film formed on, 389

flow rate on flow rate, high-temperature aqueous solutions, 482

intergranular stress corrosion cracking, neutron-irradiated, 451

irradiated, crack growth in primary water, solution-annealed steels, 460

stainless steel, catalytic response and electrode kinetics on noble metal-treated type 304 in water, 1242

stainless steel, slow strain rate test in high-temperature water, 57

stainless steels, stress corrosion cracking, based on repassivation kinetics, 32

Type 304L stainless steel

stainless steel, slow strain rate test in high-temperature water, 57

Type 309 stainless steel

atmospheric pressure, fluidized bed combustion, burning high-chloride coals, convection section, 298

Type 316L stainless steel

functionally gradient material, ceramics erosion-corrosion, 654

Type 347 stainless steel

atmospheric pressure, fluidized bed combustion, burning high-chloride coals, convection section, 298

carbon and nitrogen effects on sensitization resistance, 289

Type 430 stainless steel

stainless steel, effects of electrolytic zirconium oxide coating on hydrogen permeation of, 998

Type C1010 mild steel

cooling water systems, industrial corrosion monitoring, 743

U**U-bend test**

stainless steel, electrochemical noise, stress corrosion cracking in slow rate load test, 921

Underfilm corrosion

protective oil coating, underfilm corrosion of, electrochemical testing method of, 722

UNS 06625. See Alloy 625**UNS A91100. See AA 1100****UNS A91110. See Al 1100****UNS A92024. See Al 2024****UNS C70600**

microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867

UNS G10080. See C1008 mild steel**UNS N06025. See Alloy 602****UNS N06690. See Alloy 690****UNS N08825. See Alloy 825****UNS S30400. See Type 304 stainless steel****V****Vapor phase inhibitors**

an overview, 144

Voltage transients

electrochemical noise, frequency analysis of transients, mathematical and computer, 675 stainless steel, electrochemical noise, stress corrosion cracking, slow rate load test, 921

W**Waste**

carbon steel, welding and heat treatment in salt brines, 1071

Waste water

cooling water systems, industrial corrosion monitoring, 743

Water. See Blue; Brackish; Cooling; High-temperature; Hydrogenated; Primary; Supercritical; Waste**Weathering steel. See also by name; by type; by UNS number; Steel**

atmospheric corrosion of quenched, tempered, high-strength, 883

weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202

Weight loss

alkaline hydrogen peroxide, titanium corrosion in, 809 carbon steel, corrosion inhibition in phosphoric acid, 2-mercaptopbenzoxazole, 1083 inhibitors, mild steel, oxadiazoles, acidic media, 733

Weld

iron-based hardfacing alloys, corrosion resistance, electrochemical potentiokinetic tests, 849

Weld thermal cycle

steel weldments, localized corrosion of carbon steel, 1272

Wet process

steel, effect of thiosemicarbazones, in phosphoric acid, 127

Wet/dry environments

carbon steel with chloride ions, electrochemical behavior of rust, wet/dry environments, 935 iron, under alternating wet and dry conditions, corrosion of, 470

Wick boiling

boiler tube failure, on-load corrosion, creep-rupture, copper deposit, 1158

Wireline

scratching, galvanic corrosion in oil and gas environments, effect of, 183

X**X-ray diffraction**

atmospheric corrosion, zinc and zinc alloy coatings, 588

carbon steel with chloride ions, electrochemical behavior of rust, wet/dry environments, 935

chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960

magnesium-based sacrificial anodes, alloying elements, electrochemical properties, 380

weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202

zinc surfaces, formation of corrosion products exposed to periodic wet-dry conditions, 1256

X-ray diffractometry

microbiologically influenced corrosion, Cu-10% Ni alloy, online monitoring, brackish water, 867

X-ray photoelectron spectroscopy

Al-2024T-3 surfaces for painting preparation, surface analysis of various methods, 395

aluminum alloys, corrosion protection system approach

interface engineering, 1032

aluminum alloys, corrosion protection, system approach

interface engineering, 887

aluminum alloys, improved corrosion protection by system approach interface engineering, 819

atmospheric corrosion, zinc and zinc alloy coatings, 588

inhibitors, mild steel, oxadiazoles, acidic media, 733

self-healing, protective films,

scratched iron surface, 901

steel in concrete and mortar,

corrosion monitoring, electrical resistance changes, 951

tin-bronze, aqueous corrosion of and inhibition by benzotriazole, 1211

tinplate, chrome-free passivation method used in canning industry, 700

weathering and carbon steel, aqueous corrosion behavior in acid-chloride environments, 1202

Z**Zinc and zinc alloys. See also Alloys and alloying**

alloy 600, stress corrosion cracking oxide film, high-temperature water, 623

atmospheric corrosion, zinc and zinc alloy coatings, 588

chloride-contaminated concrete, corrosion of galvanized rebars embedded in, 960

reinforced concrete, humectant use in cathodic protection of, 1140

steel, coated galvanized, electrochemical impedance spectroscopy, salt spray fog chamber, 1220

steels, zinc-coated, galvanic protection distance, environmental conditions, 139

zinc surfaces, formation of corrosion products exposed to periodic wet-dry conditions, 1256

Zinc coatings

atmospheric corrosion, zinc and zinc alloy coatings, 588

steels, zinc-coated galvanic protection distance, environmental conditions, 139

Zinc-nickel alloy. See also Alloys and alloying

hydrogen permeation, corrosion resistant, 283

Zinc-nickel-phosphorus alloy. See also Alloys and alloying

hydrogen permeation, corrosion resistant, 283

Zirconium and zirconium alloys. See also Alloys and alloying

simple immersion conditions in oxidizing chloride solutions, pit simulation, 523

Zirconium oxide coating

stainless steel, effects of electrolytic zirconium oxide coating on hydrogen permeation of, 998